

RECEIVED

DEC 9 1985

DRAFT

MONTANA DEPT. OF NATURAL  
RESOURCES & CONSERVATION

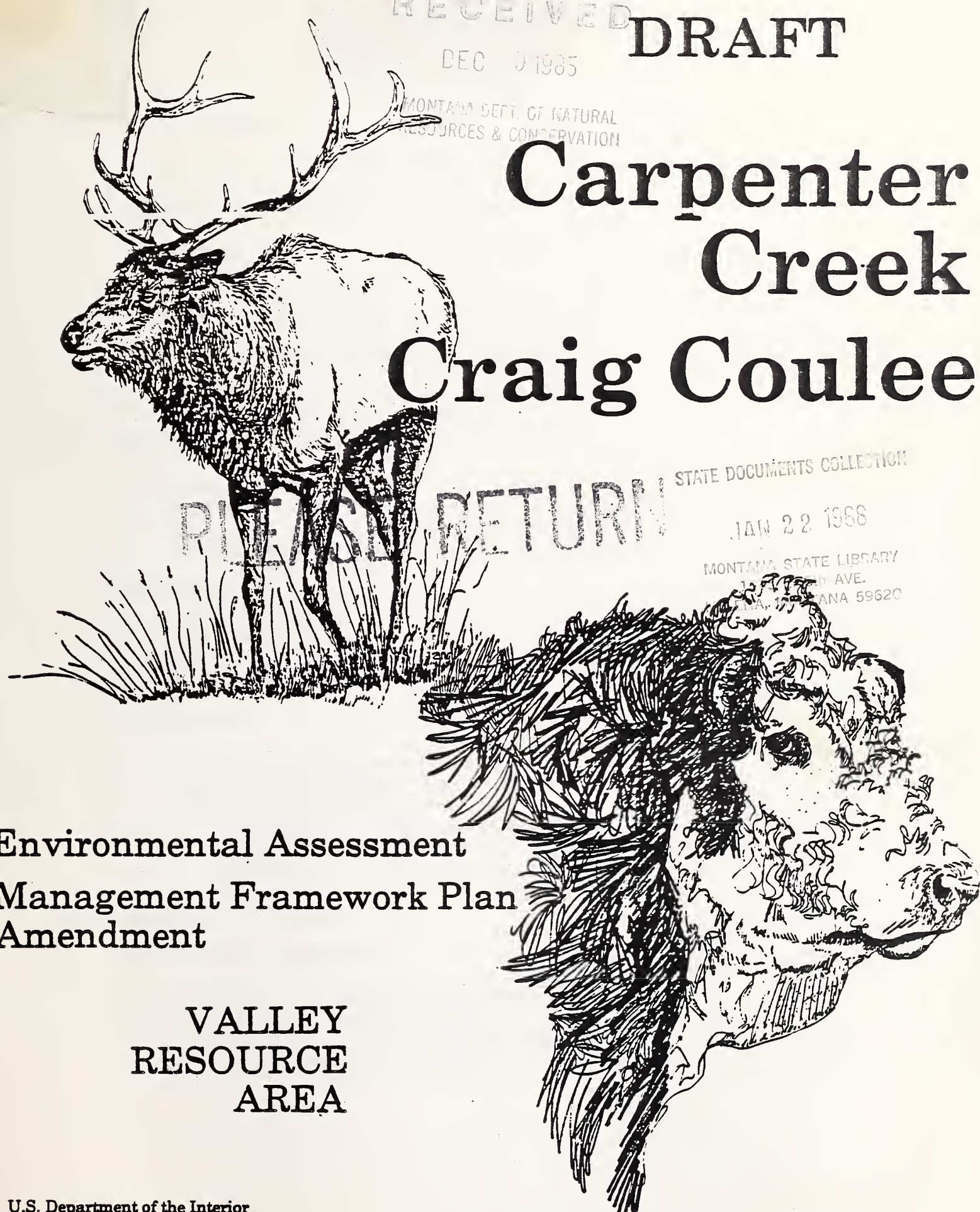
# Carpenter Creek Craig Coulee

STATE DOCUMENTS COLLECTION

JAN 22 1986

MONTANA STATE LIBRARY  
1300 AVENUE  
HELENA, MONTANA 59620

PLEASE RETURN



Environmental Assessment  
Management Framework Plan  
Amendment

VALLEY  
RESOURCE  
AREA

U.S. Department of the Interior  
Bureau of Land Management  
Lewistown District Montana

December 1985

APR 25 1990

**MONTANA STATE LIBRARY**

S 639.92 U1ccc 1985 c.1

Carpenter Creek, Craig Coulee :environme



3 0864 00057743 0

## TABLE OF CONTENTS

Part I - MFP Amendment. . . . .	1
I. Introduction - Purpose and Need . . . . .	1
II. Assumption Guidelines . . . . .	3
III. MFP Alternatives. . . . .	3
A. Proposed Action . . . . .	3
B. No Action Alternative . . . . .	7
IV. Public Involvement and Issue Identification . . . . .	7
V. Affected Environment. . . . .	8
VI. Environmental Impacts . . . . .	10
A. Proposed Action . . . . .	10
B. No Action Alternative . . . . .	10
Part II - Activity Plan . . . . .	11
I. Introduction. . . . .	11
A. Purpose and Need. . . . .	11
B. Issues. . . . .	13
C. Conformance Statement . . . . .	15
II. Alternatives. . . . .	15
A. Alternative Development Criteria. . . . .	15
B. Alternatives Considered But Not Analyzed. . . . .	16
C. Description of Alternatives . . . . .	16
1. Alternative 1 - Existing Management . . . . .	16
2. Alternative 2 - Rest-Rotation . . . . .	17
3. Alternative 3 - Preferred Alternative . . . . .	20
III. Affected Environment. . . . .	22
IV. Environmental Consequences. . . . .	30
A. Alternative 1 - Existing Management . . . . .	30
B. Alternative 2 - Rest-Rotation . . . . .	32
C. Alternative 3 - Preferred Alternative . . . . .	36
D. Alternative Comparison Summary. . . . .	39



Digitized by the Internet Archive  
in 2016

<https://archive.org/details/carpentercreekcr1985unit>



## PART I - MFP AMENDMENT

### I. INTRODUCTION-PURPOSE AND NEED

The Management Framework Plan (MFP) is the land use planning document which sets the overall goals for management; makes resource allocations where there are competing uses; and establishes constraints or limitations on uses to maintain or protect particular resource values. The Willow Creek Unit of the Valley MFP includes the Carpenter Creek and Craig Coulee Allotments (see Figure 1). It was updated and approved in 1978, following public review and comment.

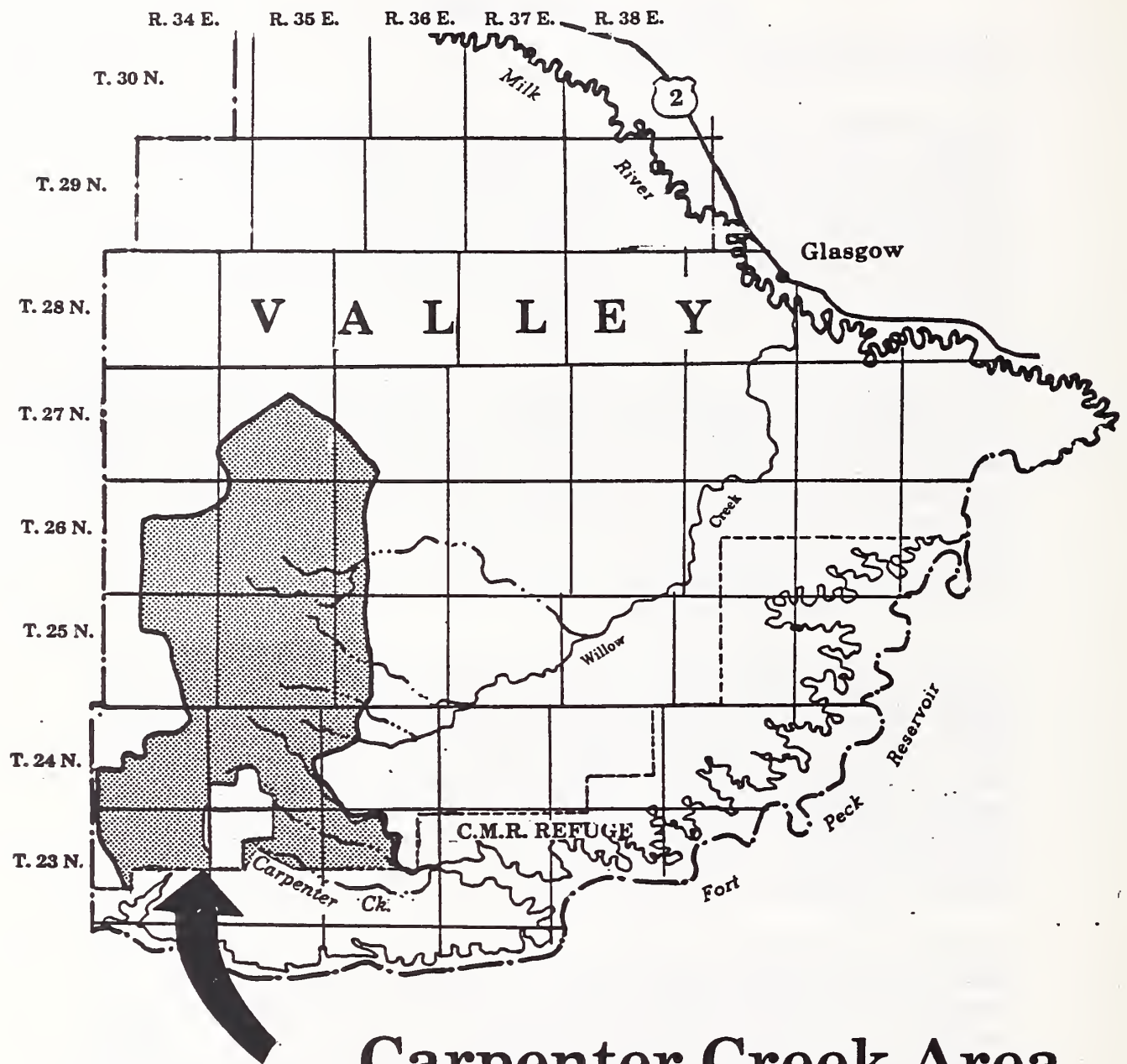
One of the MFP goals established for the Carpenter Creek Allotment is to maintain or enhance elk habitat. The MFP also included a limitation on the number of animal unit months (AUMs) of livestock use that could be grazed during the summer in the Carpenter Creek Allotment, because of the possibility of direct competition between livestock and the elk. The limit on AUMs was based on the level of use occurring in 1978, because of a general perception that habitat conditions were mostly satisfactory, and a healthy, viable elk herd was present.

In 1982, the Page-Whitham Land and Livestock Company leased the private land in this area and was issued a grazing permit for the public lands included in these two allotments. After a review of their operation, they felt they needed some changes in order to make it more economically viable. Therefore, they proposed running separate cow-calf and yearling operations. This would require more livestock use during the summer in the Carpenter Creek Allotment. This conflicts with the existing decisions in the MFP and cannot be approved unless these decisions are amended.

In the Craig Coulee Allotment the MFP decision required yearlong rest in the grazing formula "due to resource problems identified." This environmental analysis addresses rest rotation as well as deferred rotation grazing to correct resource problems in the Craig Coulee Allotment. Grazing management other than rest rotation would conflict with the original MFP decision and could not be approved unless this MFP is amended.

Any amendment of these MFP decisions requires a review of alternatives, an analysis of the environmental consequences of any change, review by the public and approval by BLM's State Director. The intent of this document is to provide information to the public and the State Director to determine whether the proposed amendments should be approved. A committee comprised of the livestock operator, representatives of the Montana Department of Fish, Wildlife, and Parks and the Bureau of Land Management considered several alternatives for managing the Carpenter Creek and Craig Coulee Allotments in an attempt to balance watershed, range, and wildlife needs. The analysis of these alternatives is

FIGURE 1. LOCATION MAP — CARPENTER CREEK AREA.



## Carpenter Creek Area



0 6 12  
SCALE IN MILES

included in Part II of this document, and is the basis for determining the potential effects of changes that might occur if the MFP is amended. If the proposed amendment is approved, continued maintenance or enhancement of elk habitat in these allotments would still be an MFP objective. The amendment would, however, provide more management flexibility for BLM and the operator in carrying out that goal.

If, after public review, the MFP amendment is approved by the State Director, the local BLM Area Manager will consult with the livestock operator and impacted publics to continue to develop an Allotment Management Plan that includes a site-specific series of management objectives. A grazing management system for each of the two allotments would include the range improvements required to implement these systems or otherwise meet the goals, and a monitoring plan that measures progress toward meeting the goals. The site-specific objectives must be consistent with the objectives of the MFP and would include those required to assure that elk habitat is maintained or enhanced.

## II. ASSUMPTION GUIDELINES

These assumptions apply to each alternative for modifying the current MFP decisions.

- A. No alternative will propose changes in forage allocations.
- B. The analysis of impacts resulting from a change in the MFP will be summarized from the alternative activity (AMP) levels in Part II of this document.
- C. Any MFP amendment will not dictate the particular grazing system by which the allotments are to be managed. This assumption gives BLM, in consultation with the involved livestock operators and interested publics the latitude and flexibility to modify the AMP, within the constraints set by the MFP amendments, without requiring future MFP modifications.

## III. MFP AMENDMENT ALTERNATIVES

### A. Proposed Action

The proposed action is to amend some of the multiple-use decisions pertaining to livestock and wildlife management in the Carpenter Creek and Craig Coulee Allotments.

Table 1 shows the impacted portions of the existing MFP. The hand written and lined out areas indicate the proposed amendments. The proposed action will require spring grazing deferment by livestock in both allotments. This will entail constructing some range improvements (water developments, fences) to implement a grazing system.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

MANAGEMENT FRAMEWORK PLAN  
RECOMMENDATION-ANALYSIS-DECISION

Name	Valley - WC
Activity	Range Management
Overlay Reference	
Step 1	Step 3

Table 1.

The preceding Multiple-Use Recommendation (I) will be carried out under three different levels of management involving livestock and allotments. The three levels are listed following as IA, IB and IC and each includes a statement of reasons and alternatives considered.

IA - Implement Allotment Plans for the purpose of improving range, watershed and wildlife habitat conditions on following allotments.

Allot #	Name	Fed. AUMs
4572	Corral Coulee	1314
4579	Upper Larb	854
4580	Craig Coulee	8598
4586	Upper Mud	232
4588	Timber Creek	573
4589	South Fork Willow	922
4594	Frenchmen Creek	572
4596	Matador	773
4595	Carpenter Creek	5582
4600	Cabin Coulee	875

- 1) Due to resource problems identified, as a minimum requirement, yearlong rest is required in the grazing formula for all allotments except #4586, ~~Upper Mud~~, #4580, #4595, and #4600.
- 2) As a minimum, growing season deferment (4/1-8/1) should be required in the grazing formula for # 4586, ~~Upper Mud~~, #4580, #4595 and #4600.
- 3) Fencing patterns for pasture units proposed by these NTPs will depend upon specific allotment situations.

Reasons

These allotments have identified resource problems related to wildlife, recreational, watershed and range management values. The identified problems relate to distribution of livestock and season of use rather than improper stocking rates.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

MANAGEMENT FRAMEWORK PLAN  
RECOMMENDATION-ANALYSIS-DECISION

Table 1 cont.

Name: BLM
Valley - WC
Action:
Range Management
Overlay Reference
Step 1
Step 3

I-C) Management by specification of proper season and numbers.

Allot #	Name	Fed. ADUs
4577	Mud Creek	360
4578	McQuin Indiv.	396
4595	Carpenter Creek	5582
4600	Cabin Coulee	875

- 1) The present (1977) use seasons will be adhered to with the following exceptions;
  - a) for allotments #4577 & #4578 no change will be made unless it would result in less use for the period 4/1 - 7/31
  - ~~b) For allotments # 4595 & #4600 no change will be made unless it results in less grazing use for the period 4/16 - 10/30~~

Reasons

On the ground determinations do not reveal extensive or unacceptable conflicts of this use with other resource values. Indiscriminate changes in present seasons of use could conflict with other resource values.

Alternatives Considered for I-C

- 1) Write AMPs to sanction present use situation.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

MANAGEMENT FRAMEWORK PLAN  
RECOMMENDATION-ANALYSIS-DECISION

Name (MFP)	Valley WC
Activity	Wildlife
Overlay Reference	
Step 1	Step 3

Multiple-Use Recommendation (See also RM 10-1)

- 1) Continue to provide seasonal habitat to meet spring, summer, and early fall needs for up to 170 elk in the Harper Ridge herd.  
(Combined with Pines herd to total 250 head for the planning unit.)  
(512 AUMs)
- 2) Establish livestock season and number as approved in 1977.
- ~~3) Changes in livestock use will be made only if change results in less livestock use being made from 4/16 - 10/31.~~

Alternatives Considered

- 1) AMPs with intensive grazing systems to make major changes in present livestock use - not necessary in view of high range condition.
- 2) Grazing seasons restricted entirely to use periods of 11/1 - 4/15.

(11)

B. No Action Alternative

This alternative would not amend the current MFP. The handwritten and lined out amendments shown in Table 1 would not apply. The exact wording for the range and wildlife portions of the current MFP is given in Appendix 1.

IV. PUBLIC INVOLVEMENT AND ISSUE IDENTIFICATION

Page-Whitham et.al. informed BLM of their proposals in August, 1982, and the limitation of the MFP on the operation were discussed. A meeting of interested groups and individuals was held on March 7, 1983, to identify issues and concerns. Following is a list of significant issues that were brought up at this meeting and subsequent contacts.

A. Economic Viability of the Ranch Unit

Page-Whitham Land and Cattle Company leased the Etchart Ranch property which has grazing preference for Craig Coulee and Carpenter Creek Allotments. The operator would like to change the operation from strictly a cow-calf operation to a cow-calf and yearling operation. This entails more summer use on the Carpenter Creek Allotment than has been previously approved.

The lack of range improvements limits the type of livestock management the operator could apply to the allotments. The lack of dependable water in the Carpenter Creek Allotment limits the use mainly to the spring. The lack of fences in the large allotments gives the operator very little control over livestock during calving and breeding. The operator's plans include smaller pastures to achieve that control.

B. Wildlife Habitat (Specifically Elk & Sharp-Tailed Grouse) and Riparian Areas

The Carpenter Creek Allotment is unique in Valley County because of the spring-filled coulee heads and the associated woody riparian areas. These areas provide the needed habitat for elk and other big game species and sharp-tailed grouse. The change in season of use could adversely impact the riparian areas and the associated wildlife species. Social intolerance between elk and livestock could also be a problem with both species using the same area in the summer.

Elk hunting, especially bowhunting, is very popular in the Missouri Breaks, which includes the Carpenter Creek Allotment. Any decline in opportunities to hunt elk would be resisted by sportsmen's groups.



The area also has a high density of sharp-tailed grouse which the Montana Department of Fish, Wildlife and Parks (FW&P) would like to maintain. Increased utilization from livestock could adversely affect the sharptail population because of decreased nesting habitat.

The area also has antelope and mule deer which could be affected by the change in season of use.

#### C. Wildlife Depredation on Private Lands

The elk herd in this area is managed by the FW&P on a "limiting factor" of landowner tolerance. If the elk are displaced onto the private land and depredation damages increase, more elk hunting permits would be given, which would lower the total herd numbers and lessen opportunities for hunting in the future.

#### D. Administrative Limits of the MFP

The MFP limits the number of AUMs that livestock can take between 4/16-10/31, allowing only a portion (approximately 28%) of the total available to be utilized during this period. One goal of the MFP is to maintain or improve elk habitat. The proposed livestock operation could be in conflict with this goal and the technical requirements of the MFP. The present decision wording is unclear from a technical point of view. The MFP designates a rest-rotation system for the Craig Coulee Allotment based on field work done in 1977 as part of the Missouri Breaks Grazing EIS preparation process.

#### E. Landownership and Public Access

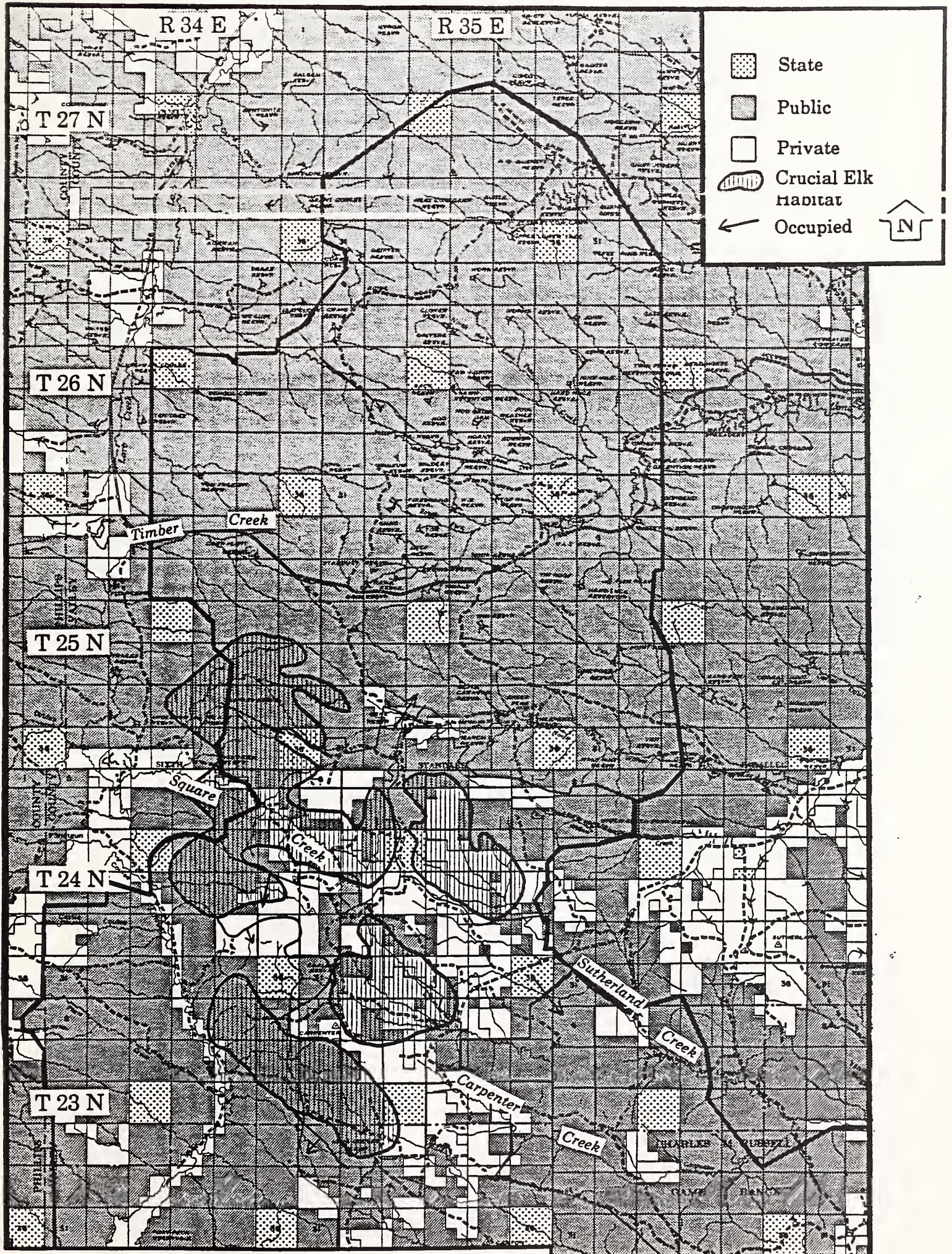
Approximately 40% of the crucial elk habitat in the Carpenter Creek Allotment is privately owned (see Figure 2). The pastures with the best habitat, Upper Southfork of Willow Creek and Square Creek, are 72% and 29% respectively private land. The possibility of fencing a portion of this private land exists to enable the operator to manage his livestock in a more economical manner. Public access to BLM land would be limited if the operator posts his land.

### V. AFFECTED ENVIRONMENT

The Carpenter Creek and Craig Coulee Allotments are located in the Willow Creek Planning Unit, in the southern portion of Valley County and border the Charles M. Russell National Wildlife Refuge (see Figure 1). More specific information can be found in Part II of this document.



FIGURE 2. CRUCIAL ELK HABITAT IN THE CARPENTER CREEK AREA.





## VI. ENVIRONMENTAL IMPACTS

These environmental impacts of changing or not changing the MFP are summarized from the analysis of implementation of the alternatives described in Part II of this document.

### A. Proposed Action

Overall watershed conditions would improve because of a more uniform livestock distribution pattern and a deferment of spring use (see Part II for details).

Range condition would improve or remain static on the allotments. The utilization pattern would become more uniform with some livestock use on the ungrazed areas. Riparian areas would remain in good condition with some significant improvement of the wetland areas.

Overall livestock management would improve under the proposed action. Calf weight and conception rates would be higher, thereby increasing the gross receipts of the ranch.

Hunter days would decline slightly or remain static. The decline would be caused by a possible reduction in sharp-tailed grouse numbers. Elk populations would remain static.

Overall wildlife habitat conditions would remain good although elk and sharp-tailed grouse could decline slightly. The initial construction cost for improvements ranges from \$249,000 to \$267,000. This includes BLM and operator costs. The long term benefit/cost ratio ranges from .9/1 to 1.1/1. Only the range improvement costs and benefits are included in this benefit/cost ratio. Marketing flexibility with yearlings, which is important to the operator, was not considered but would give the operator more opportunities to improve his financial return on his investment.

Elk depredation of cropland, caused by the displacement of elk by livestock, would remain minimal or increase slightly.

### B. No Action Alternative

Watershed conditions would continue to decline because of livestock distribution and season of use problems.

Ecological condition which is primarily good or excellent would decline or remain static. The utilization pattern would continue to be heavy around existing water and in the coulee bottoms, while some uplands would remain ungrazed.



Riparian conditions would remain static or decline slightly because of spring and summer use in the Carpenter Creek Allotment.

Overall livestock management would improve slightly or remain static because of the additional range improvements. Conception rates would remain static with some additional calf weight because of additional stockwater. Ranch economics would improve slightly because of slightly increased calf weights.

Hunter days would remain static or decline slightly because of a possible decline in elk and sharptail numbers. The initial construction cost for improvements is estimated at \$243,000. This includes BLM and operator costs. The long term benefit/cost ratio is .6/1.

## PART II - ACTIVITY PLAN

### I. INTRODUCTION

This portion of the document evaluates various grazing management systems on the Craig Coulee and Carpenter Creek Allotments in southwestern Valley County, Montana (see Figure 1).

The Carpenter Creek and Craig Coulee Allotments formerly comprised the Etchart South Ranch and had been operated by the Etchart family since the early 1900's. The allotments total about 200,000 acres, of which approximately 65% is public land administered by BLM (see Figure 3). The 1977 Missouri Breaks Grazing Environmental Impact Statement (EIS) proposed no change in management for the Carpenter Creek Allotment, due to generally satisfactory conditions, and proposed rest-rotation grazing for the Craig Coulee Allotment. Though conditions are generally good, some areas are in fair condition, and both categories can be improved through more intensive grazing management.

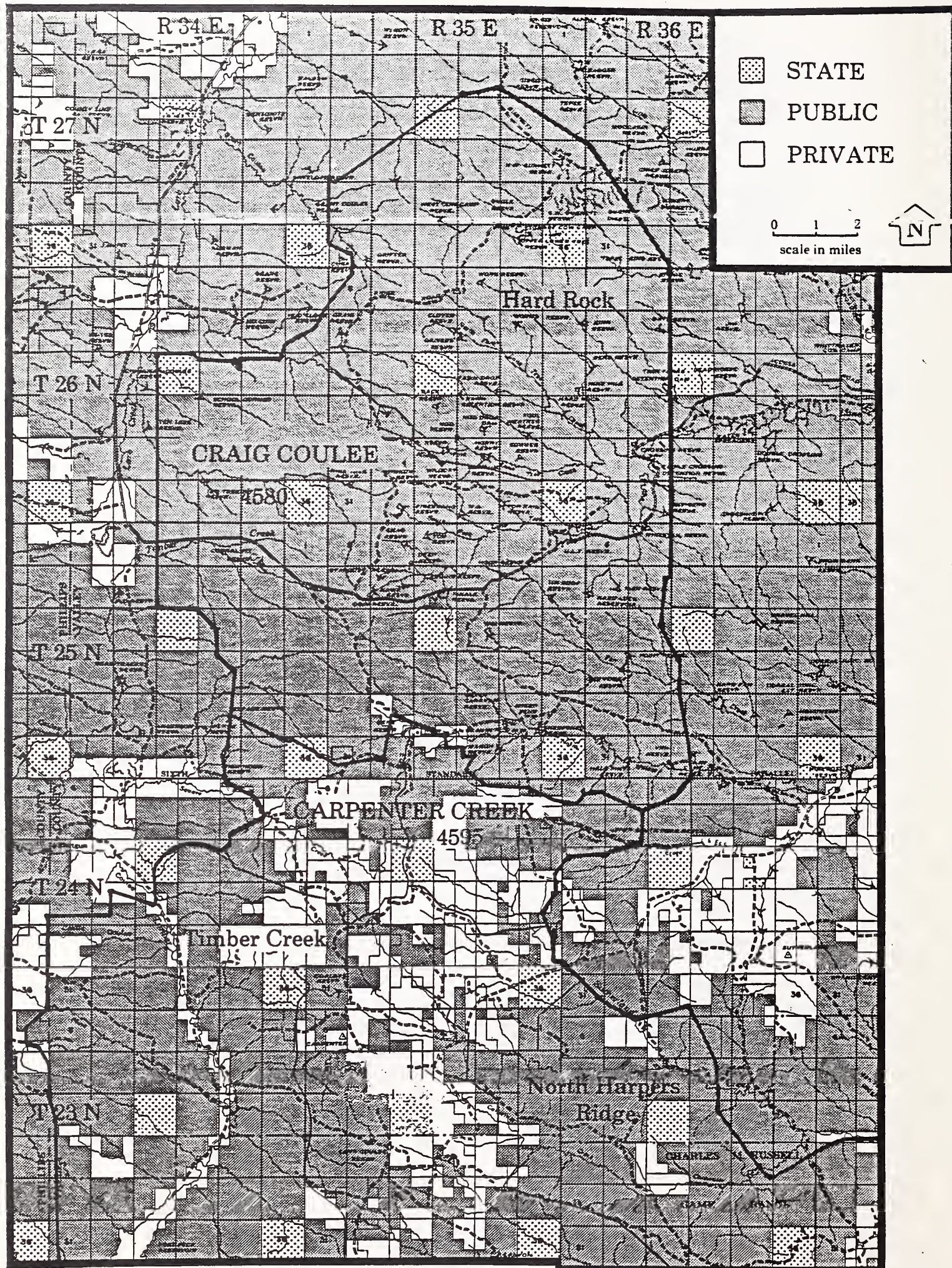
The allotments have outstanding wildlife values, particularly for elk. Interest in habitat maintenance and continued access for hunting is high among local sportsmen and the Montana Department of Fish, Wildlife and Parks (FW&P).

#### A. Purpose and Need

During the Management Framework Plan (MFP) planning process associated with the Missouri Breaks EIS, a recommendation (RM-10) was made and adopted which, for the benefit of elk, limited changes in livestock use in the Carpenter Creek Allotment.



FIGURE 3. LAND STATUS — CARPENTER CREEK AREA.





In August of 1982, the new operator, Page-Whitham Land and Livestock, asked BLM to consider a change in the grazing use that was in conflict with the MFP. The changes requested by the operator entails more summer use on the Carpenter Creek Allotment than allowed by the MFP. Page-Whitham formally applied in April 1984, for a grazing permit that would be in conflict with the MFP. They also requested that the BLM develop an Allotment Management Plan (AMP) for these allotments. Since 1982, the Valley Resource Area staff has worked closely with FW&P, the operator, the Soil Conservation Service (SCS) and Charles M. Russell National Wildlife Refuge (CMR) personnel to jointly develop a management program that could resolve the following issues. Local and state bowhunting groups have also been consulted.

## B. Issues

1. Page-Whitham Land and Cattle Company leased the Etchart Ranch property which has grazing preference for the Craig Coulee and Carpenter Creek Allotments. The operator would like to change the operation from strictly a cow-calf operation to a cow-calf and yearling operation. This entails more summer use on the Carpenter Creek Allotment than has been previously approved.

The BLM and operator feel the riparian areas could improve with proper management. The utilization pattern by livestock in the past has been heavy in the lower coulees and very light on the uplands. The woody riparian at the upper ends of the coulees is in good condition.

The lack of range improvements limits the type of livestock management the operator could apply to the allotments. The lack of dependable water limits use in the Carpenter Creek Allotment mainly to springtime. The lack of fences in the large allotments gives the operator very little control over livestock during calving and breeding. The operator has proposed smaller pastures to achieve that control.

2. The operator made an application to run cows yearlong in the Carpenter Creek Allotment and yearlings spring and summer in the Craig Coulee Allotment. This is a significant departure from the current season of use in the Carpenter Creek Allotment and could affect the vegetative conditions in the allotment. Due to the degree of conflict anticipated with the change applied for, yearlong use in Carpenter Creek was not considered a viable alternative.



3. The operator is concerned that the MFP limits the number of AUMs that livestock can take between 4/16-10/31, allowing only a portion (approximately 28%) of the total available to be utilized during this period. One goal of the MFP is to maintain or improve elk habitat. This analysis is intended to determine whether the proposed operation could be in conflict with this goal and the technical aspects of the MFP. The present decision is spelled out clearly from a technical point of view.
4. The BLM, FW&P, several public groups and the operator are all aware that the Carpenter Creek Allotment is unique in Valley County because of the spring-filled coulee heads and the associated woody riparian areas. These areas provide the important habitat for elk and other big game species and sharp-tailed grouse. The change in season of use could adversely impact the riparian areas and the associated wildlife species. The social intolerance between elk and livestock could also be a problem with both species using the same area in the summer.

Elk hunting, especially bowhunting, is very popular in the Breaks, which includes the Carpenter Creek Allotment. Any decline in opportunities to hunt elk would be opposed by sportsmen groups.

The area also has a high density of sharp-tailed grouse which the FW&P would like to maintain. Increased utilization from livestock could adversely affect the sharptail population because of decreased nesting habitat.

The area also has antelope and mule deer which could be affected by the change in season of use.

5. The elk herd in this area is managed by the FW&P on a "limiting factor" of landowner tolerance. If the elk are displaced onto the private land and depredation damages increase, more elk hunting permits would be given which would lower the total herd numbers and lessen opportunities for hunting in the future. This issue concerns sportsmen, the FW&P and Page-Whitham.
6. The BLM and public interest groups are concerned with access to public and private lands in the area. The crucial elk habitat has significant amounts of privately owned land, averaging 40%, in the Carpenter Creek Allotment. In the pastures with the best habitat, Upper Southfork of Willow Creek and Square Creek, private land comprises about 72% and 29% of the crucial elk habitat (see Figure 2). The possibility of fencing a portion of

this private land exists to enable the operator to manage his livestock in a more economical manner. Public access to BLM land would be limited if the operator posts his land.

7. The present operator is convinced that to make an economical ranch unit, he needs smaller pastures for breeding and calving and the option to run yearlings in the Craig Coulee Allotment. He also needs an artificial insemination (AI) pasture in the Carpenter Creek Allotment.

The present owners of the base property are concerned that the MFP decision limiting AUMs during a specified season, would lower the total value of the ranch because of the interspersed private and public lands in the critical elk habitat area.

#### C. Conformance Statement

The operator's proposed livestock operation is in nonconformance with the existing MFP decision, since he proposes using more AUMs during the period April 15, to October 30, than was approved in 1978.

## II. ALTERNATIVES

### A. Alternative Development Criteria

The Carpenter Creek and Craig Coulee Allotments have the potential for an infinite number of alternatives, if no guidelines are established. The alternatives were narrowed to viable alternatives through the working group which consisted of the owners of the ranch, the present operator, U.S. Fish and Wildlife Service personnel, FW&P personnel and staff specialists from the BLM.

The range of alternatives was narrowed by these criteria:

1. emphasizing grazing management systems to correct vegetation problems;
2. providing special management consideration for areas which have a definite potential to support woody riparian vegetation;
3. minimizing change in traditional elk use patterns in the allotments;
4. minimizing impacts on wildlife habitat, especially elk and sharp-tailed grouse habitat;

5. identifying concerns of user groups by meetings with the user groups;
6. determining interest among the public; and
7. considering grazing systems that would meet the operator's needs.

Two alternatives and a No Action Alternative were then developed based from these criteria. The table at the conclusion of the text is a comparison table for these alternatives.

#### B. Alternatives Considered but not Analyzed

Several alternatives were considered by the working group but were discarded as not viable for not meeting one or more criterion. A brief list of these alternatives is located below with the bulk of the discussion located in Appendix 2.

1. Deferred rotation using the Timber Creek Pasture during the summer.
2. Deferred or season long use on Carpenter Creek was considered to conform with the application made by Page-Whitham for yearlong use in Carpenter Creek.
3. Restrict livestock grazing to 11/1 to 4/15 on the Carpenter Creek Allotment.
4. Split herd alternative.
5. Etchart cow-calf operation (recent historical use).
6. Rest-rotation using Harper's Ridge Pasture in the grazing system.
7. Reallocation of forage.

#### C. Description of the Alternatives

Alternative 1, No Action, would conform to the current MFP. Alternatives 2 and 3 are general implementation alternatives that would conform to the proposed MFP amendment.

Specific objectives developed in compliance with the MFP in the allotment management plans would be monitored. If these objectives were not met, a change in the grazing system could be implemented to correct any deficiencies in the plan.

##### 1. Alternative 1: No Action (Existing Management)

The existing management is a yearly, annual authorization with specified season and numbers. The operator is running approximately 1,400 cows and 1,225 yearlings on the Craig Coulee and Carpenter Creek Allotments.



The cows are wintered on Harper's Ridge and Timber Creek and then moved into the Sutherland and Upper Willow pastures. The yearlings follow the cows in the Timber Creek Pasture and then move into the Craig Coulee Allotment until 9/30. The cows are trickled into Craig Coulee after branding (see Appendix 3, Alternative 1).

The replacement yearling heifers and 2-year old cows are pastured in the Upper Square Creek Pasture until 6/15, and then artificially inseminated. Replacement stock is then released into the Sutherland or Upper Willow Pasture with bulls to finish breeding the replacement stock. The replacement livestock is moved into the Craig Coulee Allotment approximately 8/10. The yearlings are removed from the allotment around the end of September and sold. The cows are moved back to winter pasture on Harper's Ridge and Timber Creek approximately 11/1 (see Appendix 3, Alternative 1).

The management proposed in the Missouri Breaks Grazing EIS is season-long (11/1-7/15) on the Carpenter Creek Allotment and a 3-pasture, rest-rotation system on the Craig Coulee Allotment (5/1-11/15). The range improvements proposed for construction in the Missouri Breaks Grazing EIS are shown in the following table:

	<u>Fences</u>	<u>Reservoirs</u>	<u>Cattle guards</u>
Craig Coulee	26 miles	21	3
Carpenter Creek	—	16	—

The estimated total cost of these improvements is approximately \$201,000. BLM would finance \$156,000 and the operator would finance \$45,000 worth of improvements under typical cost share agreements.

No significant, residual, adverse impacts from these improvements were documented in the EIS for any environmental components (see Missouri Breaks Grazing EIS 5-1 to 5-5). The mitigation of projects would be addressed by an interdisciplinary team (in accordance to Mitigating Measures in the Missouri Breaks Grazing EIS 4-1, No. 7) when any project is proposed for construction.

A cultural inventory would be done before a project is scheduled for construction and mitigation would be applied to any cultural sites at that time.

This alternative conforms to the existing MFP.

## 2. Alternative 2: Rest-Rotation system

This alternative is a grazing system involving winter use on Harper's Ridge and Timber Creek and calving the cows in the north end of these pastures until 6/15. A 3-pasture

rest-rotation system would be proposed on the Upper Square Creek, Southfork Willow and Sutherland Pastures. Livestock would be grazed from approximately June 15 until October 31 in this area. A 3-pasture rest-rotation would be proposed for the Craig Coulee Allotment (see Appendix 3, Alternative 2).

The grazing formula for Carpenter Creek Allotment would be as follows:

	11/1	3/15	6/15	9/1	10/30
A.	////////				
B.		////////			
C.			////////		
D.				////////	
E.			rest		

Treatment A - Winter livestock on Harper's Ridge and Timber Creek Pastures.

Treatment B - Calve cows in Harper's North and Barth Ridge Pastures and graze for livestock production.

Treatment C - Graze for livestock production.

Treatment D - Defer until after the hot season for maintenance of riparian areas and after seedripe for western wheatgrass and bluebunch wheatgrass.

Treatment E - Rest for recovery of plant vigor and seedling establishment.

Year	Harper's Ridge Plum Creek	Barth Ridge Harper's North	Upper Square Cr.	Southfork Willow	Sutherland
1	A	B	C	D	E
2	A	B	D	E	C
3	A	B	E	C	D



The grazing formula for the Craig Coulee Allotment would be as follows:

	<u>5/1</u>	<u>7/15</u>	<u>9/30</u>
A.	////////		
B.	//////////		
C.	rest		

Treatment A - Graze for livestock production.

Treatment B - Defer until seedripe of western wheatgrass and green needlegrass.

Treatment C - Rest for improvement of plant vigor and seedling establishment.

<u>Year</u>	<u>Sheep- shed</u>	<u>Frenchman Hills</u>	<u>Hard Rock</u>
1	A	C	B
2	B	A	C
3	C	B	A

Approximately 1,000 cows would be run in the Carpenter Creek Allotment and 2,400 yearlings in Craig Coulee Allotment.

The following range improvements would be needed to implement the system:

	<u>Water Developments</u>	<u>Fences</u>	<u>Cattle guards</u>
Craig Coulee	(12 reservoirs) (1 well and pipeline)	8 miles	1
Carpenter Creek	(5 springs) (6 reservoirs)	10.5 miles	3

Approximately 3 miles of the proposed fence in the Carpenter Creek Allotment is boundary fence between the CMR and the BLM. This portion of the fence would be financed by the CMR.

Range improvement costs are estimated to total \$222,500; BLM costs of \$153,350 and operator costs of \$69,150.

The alternative conforms to the proposed MFP amendment, but not the existing MFP.

### 3. Alternative 3: Deferred Rotation

This alternative would implement a deferred-rotation system with approximately 1,200 cows on Carpenter and part of Craig Coulee, and a deferred-rotation system with approximately 500 yearlings on the remaining part of Craig Coulee (see Appendix 3, Alternative 3).

The grazing formula for the cow operation is proposed as follows:

11/1      3/15      5/15      6/27      8/5      9/25      10/30

A.////////

B.////////

C.////////

D.////////

E.////////

F.////////

Treatment A - Winter livestock on Harper's Ridge and Timber Creek Pastures.

Treatment B - Calve cows in Harper's North and Barth Ridge Pastures.

Treatment C - Graze for livestock production in the Upper Square Creek or the Southfork Willow Pasture.

Treatment D - Defer riparian areas and critical elk habitat from livestock.

Treatment E - Defer western wheatgrass and green needlegrass until seedripe.

Treatment F - Graze after hot season on riparian areas.

Year	Harper's Rdg. Plum Creek	Barth Ridge Harper's North	Upr. Square Cr.	Southfork Willow	Sheepshed	Frenchman Hill
1,3	A	B	C	F	E	D
2,4	A	B	F	C	D	E



The Sutherland Pasture, which is 71% private land, would be used at the operator's discretion as long as no damage occurs to the public land. The operator would generally use it after artificial insemination of his replacement stock in late July and early August.

The grazing formula for the yearling operation in Craig Coulee is proposed as follows:

#### Grazing Formula

5/1    7/15    9/30

Treatment A. ////////

Treatment B. ////////////////

Treatment A - Graze for livestock production.

Treatment B - Defer until seedripe of green needlegrass.

#### Grazing Schedule Pasture

<u>Year</u>	<u>Hard Rock</u>	<u>ULT</u>
1	A	B
2	B	A

This system was designed by BLM with assistance from other members of the working group to maintain and improve ecological range condition, maintain woody riparian areas, and meet the needs of the elk and the livestock operation.

The following table shows the range improvements that would be necessary on the allotments to make this system work as proposed (see Appendix 4 for locations of proposed projects by alternative).

<u>Allotment</u>	<u>Water Developments</u>	<u>Fences</u>	<u>Cattle guards</u>
Craig Coulee	(12 reservoirs) (1 well and pipeline)	15 miles	1
Carpenter Creek	(5 springs) (6 reservoirs)	10.5 miles	3

Approximately 3 miles of the proposed fence in the Carpenter Creek Allotment is a boundary fence between the CMR and BLM. The CMR would pay for this fence. Range improvement costs are estimated to total \$243,500; BLM costs of \$161,750 and operator costs of \$81,750.

The improvements are necessary to distribute livestock more evenly and allow late summer use on the Carpenter Creek Allotment. A well and pipeline are proposed on the Larb Creek drainage instead of reservoirs because of water rights legalities and greater cost effectiveness.

This alternative complies with the proposed MFP amendment, but not the existing MFP.

### III. AFFECTED ENVIRONMENT

#### A. Setting and Topography

The allotments are located approximately 40 miles southwest of Glasgow, Montana, and have two county roads that provide access.



The Carpenter Creek Allotment is typical of the rolling plains land form, with wet coulees and springs in the north portion (Square Creek Pasture) and pine trees scattered throughout the south end of the allotment (Timber Creek and Harper's Ridge Pastures). The allotment consists of approximately 99,562 acres and borders Fort Peck reservoir. Of this acreage 60,626 acres (61%), are BLM administered.

The allotment is dissected by four major drainages: Square Creek, Timber Creek, Sutherland Creek and Carpenter Creek, all of which are intermittent streams (see Figure 3).

The Craig Coulee Allotment's topography varies from rolling hills to badlands. The allotment is dissected by the Lone Tree Creek drainage that flows east into Triple Crossing Reservoir. The west portion of the allotment drains into Larb Creek. There are approximately 95,000 acres in this allotment of which approximately 90,000 acres (95%) are Federally managed (see the Missouri Breaks Grazing EIS 2-1 through 2-89 and Draft EIS for Charles Russell National Refuge 31-60 for more detailed information).

#### B. Soils (see Missouri Breaks EIS)

The majority of the soils in the allotments are highly susceptible to erosion. Geologic erosion is occurring on both allotments and is significant in Craig Coulee. Geologic and accelerated erosion are occurring in localized coulees where trailing and decreased ground cover have increased erosion. Trailing livestock out of the coulee bottoms where the existing water is located is contributing to accelerated erosion. Underutilized vegetation on the bench tops contributes to accelerated erosion because of a lack of vegetative ground cover and litter deposited and accumulated into the soil surface (illustrated in pp. 2-10 of Missouri Breaks EIS).

Watershed cover is generally adequate in the remaining portions of the allotment.

Salts in some of the soils, especially shales, are leached out below many reservoirs, causing a localized saline seep (see 2-3 to 2-12 for more detailed information).

#### C. Geology (see Missouri Breaks 2-1 and Missouri Breaks Wilderness Suitability Study/EIS 3-1)

The geology of the area is typical of the Missouri Break where exposed rock is largely sedimentary shales and sandstones of the Tertiary age. The formations present on these allotments

are the Foxhills sandstone and the Bearpaw shale. The Bearpaw shale is black marine shale that contains salt and selenium concentrations. Care should be taken when building reservoirs so as to reduce the concentration of salts and selenium.

#### D. Vegetation

The Missouri Breaks Grazing EIS classified the vegetation types into the following groups:

	Carpenter Creek Acres	Craig Coulee Acres
Grass	41,768	59,499
Sagebrush	8,585	23,772
Conifer	9,261	--0--
Greasewood	477	9,342
Waste	535	--0--
Saltbush	--0--	2,388
	60,626	95,001

Ecological range condition was classified as follows for the allotments:

	Excellent	Good	Fair	Poor
Craig Coulee	-0-	80%	20%	-0-
Carpenter Creek	27%	70%	3%	-0-

The major grass species are western wheatgrass (Agropyron smithii), bluebunch wheatgrass (Agropyron spicatum), needleandthread (Stipa comata), and green needlegrass (Stipa viridula). The major upland shrubs are: silver sagebrush (Artemisia cana), big sagebrush (Artemisia tridentata), skunkbrush sumac (Rhus trilobata), (Juniperus spp.), greasewood (Sarcobatus vermiculatus) and nuttals saltbush (Atriplex nuttallii).

No rare or endangered plant species are known to exist on public lands in the Carpenter Creek or Craig Coulee Allotments.

The mesic (moist) communities consist of phreatophytic and mesophytic plants. Western wheatgrass, bluegrasses (Poa spp.), rushes (Juncus spp.), spike rushes (Eleocharis spp.), bulrushes (Scripus spp.), inland saltgrass (Distichlis stricta), sedges (Carex spp.), and cattail (Typha latifolia) often form the understory in the wetter coulee bottoms. Willows (Salix spp.), dogwood (Cornus stolonifera), buffaloberry (Shepherdia argentea) and chokecherry (Prunus virginiana) are part of the shrub component, while willow tree species, cottonwood (Populus deltoides), aspen (Populus



tremuloides), box elder (Acre negundo) and hawthorne (Crategus columbiana) comprise the overstory. Some upslope communities are often dominated by buffaloberry and chokecherry with scattered cottonwoods, while others are predominantly hawthorne stands or aspen groves.

Together these vegetative components form prime elk habitat where food, water and cover are readily available. The forage is characteristically green and succulent often providing the only moisture available. These moist, shrub/tree zones are basically linear in shape, their interspersions with the more xeric grass and shrub communities creating a multitude of ecotones. The ecotones further enhance the areas value to elk, and the woody riparian areas in Carpenter Creek and Craig Coulee are in satisfactory condition at the present time but are not at their ecological site potential in terms of woody vegetation. The wetland herbaceous communities below these spring coulees are not adequate and have not reached their site potential. Concentration of livestock due to topography, cow-calf grazing habits and early spring use every year, keeps these areas from improving and prevents establishment of willows and other woody shrubs. Because these spring sites are the only available water all the cattle are forced to water in these areas causing overgrazing. The additional range improvements are necessary to implement the grazing system.

The utilization pattern on the allotments is very uneven with heavy utilization and overgrazing in the majority of coulee bottoms and around some reservoirs. The ridge tops in many areas are generally underutilized, which is partially responsible for a diminished condition of the grass plants. Many of the bunchgrass plants are dead or decadent in these ungrazed areas. Accumulated standing dead material greatly reduces forage production and availability for all grazing animals.

Heavy utilization occurs along the north fork of Willow Creek, around Craig and T.C. Reservoirs, on Sutherland Creek and up the wet coulees draining into Sutherland Creek.

The utilization problem could be remedied by a system of regular periods of rest from grazing and limited periods of grazing. Additional waters would be needed to implement such a grazing system. Management to control the time the animals spend in the preferred areas could be accomplished by fenced pastures and/or herding.

## E. Livestock Management

At present, allotment management plans have not been implemented on either of the allotments. The Missouri Breaks Grazing EIS suggested no change of management on Carpenter Creek because of the "good" range condition and high wildlife values. A rest-rotation plan was suggested for the Craig Coulee Allotment.

There are 5,582 Federal AUMs available in the Carpenter Creek Allotment. The MFF limits livestock grazing in the Carpenter Creek Allotment to 1588 Federal AUMs between 4/15 and 10/31 because of elk habitat concerns.

The allotments were adjudicated the following AUMs for livestock in 1962:

	<u>Federal</u>	<u>State</u>	<u>Private</u>	<u>COE</u>	<u>Total</u>
Craig Coulee	8,598	360	82	-0-	9,040
Carpenter Cr. (outside CMR)	5,582	540	3,474	-0-	9,596
Carpenter Cr. (inside CMR)	<u>2,736</u>	<u>145</u>	<u>925</u>	<u>25</u>	<u>3,831</u>
Total	16,916	1,045	4,481	25	22,467

The current livestock operation runs approximately 1,400 cows yearlong on the Carpenter Creek Allotment and summers these same cows and approximately 1,225 yearlings in the Craig Coulee Allotment for a total of 22,467 AUMs.

The approximate use by pasture is as follows:

<u>Pasture</u>	<u>Dates</u>
Harper's Ridge	12/1 to 5/1
Timber Creek	12/1 to 5/1
Square Creek	4/1 to 8/10, 11/1 to 12/1
Craig Coulee (south)	5/1 to 10/30
Craig Coulee (north)	5/1 to 10/30

See Appendix 3, Alternative 1, for more details.

The following table lists the kinds and numbers of range improvements currently located on BLM land in the allotments:

	<u>Water Developments</u>	<u>Fences</u>	<u>Cattle guards</u>
Craig Coulee	57	39 miles	3
Carpenter Creek	<u>2</u>	<u>41 miles</u>	<u>2</u>
Total	59	80 miles	5



## F. Visual Resources and Recreation

The Carpenter Creek and Craig Coulee Allotments are rated Class II and IV for visual resources which rank as some of the highest in Valley County (Class II is average scenic quality while Class IV is excellent scenic quality). Recreation is mainly limited to hunting. The ranch owners have always allowed access and camping on private land for hunting purposes. A bow season on elk in the Missouri Breaks is very popular locally as well as nationally. Sharptail and mule deer hunting on the allotment is also very popular. The following table shows annual hunter days, by species, in the study area.

		<u>Hunter days</u>						<u>Total</u>
	<u>Elk</u>	<u>Mule Deer</u>	<u>Ant.</u>	<u>Ducks</u>	<u>Geese</u>	<u>Sage Grouse</u>	<u>Sharp-tailed Grouse</u>	
Carpenter Cr.	671	469	45	5	4	39	273	1506
Craig Coulee	<u>57</u>	<u>344</u>	<u>73</u>	<u>65</u>	<u>49</u>	<u>144</u>	<u>107</u>	<u>839</u>
Total	728	813	118	70	53	183	380	2345

(Montana Department of Fish, Wildlife and Parks Harvest Data)

### Prehistoric and Historic Features

Several stone corrals and sheepherder monuments are in the area. The stone house (privately owned) is of some local historical interest. No intensive archeological surveys have been done in the area (see Missouri Breaks EIS for more information on these features).

## G. Social and Economic Conditions

Valley County is sparsely settled with an economy largely dependent on agriculture. The rural lifestyle continues to exert a strong influence on the local society. Because of the dominant nature of agriculture, the vitality of the Valley County economy is closely tied to agricultural price levels, and the health of the livestock industry impacts the economic well-being of the entire community. Over the past several years the livestock industry has experienced declining prices for end products, increasing costs of production and declining land values. This has depressed economic growth in rural areas dependent on agriculture.

Some livestock operations are moving toward intensive management and diversification to survive the current market conditions.

The Page-Whitham livestock operation is dependent on grazing permits on public lands for 74% of their range forage requirement.

#### H. Wilderness

A portion of the Burnt Lodge Wilderness Study Area lies within the Carpenter Creek Allotment (see Appendix 5). The Valley County portion contains approximately 6,520 acres or 47% of the total. A draft EIS proposes that the complete study area be designated as wilderness. No range improvements are proposed for the wilderness study area and the proposed amendment would not impact the WSA.

#### I. Wildlife Habitat Management

A wide variety of wildlife, common to the river breaks and rolling plains landforms, occur in the area, but two species are of particular concern: elk (Elaphus canadensis) and sharp-tailed grouse (Tympanuchus phasianellus).

Elk in the Missouri Breaks are important because of the high degree of hunter interest and their limited distribution in high plains ecosystems. There are no other known, free-roaming herds that exist naturally in rolling plains/river breaks habitat; these animals are a unique representation of the elk herds originally inhabiting the prairies. The Valley County elk herd is the eastern-most extension of the Missouri Breaks herd.

The Valley County herd constitutes approximately 21-26% of the Missouri Breaks herd. The entire Breaks elk population averages between 1200-1500 head. The Hunting District 631, herd has averaged about 312 head during the past 7 years and has varied from estimates of 200-443 elk (Montana Department of Fish, Wildlife and Parks). This hunting district includes both allotments. Historically, the limiting factor of the Valley County elk herd has been landowner tolerance of crop depredation by elk.

As stated in the existing MFP, elk use in Carpenter Creek and Craig Coulee Allotments occurs mostly in the late spring, summer and fall. Much of the elk calving probably occurs here. The key reason this area is such high quality habitat is the abundance of woody riparian vegetation. These tree/shrub areas are manifested principally in mesic coulees, some with free water evident, and augmented by upland woody draws and aspen groves. Additionally, cattle management has apparently been such that social intolerance between elk and cattle has not been a major limiting factor to the elk herd. The critical elk habitat is located on the upper end of Carpenter Creek, Square Creek, Sutherland Creek, Frenchman Hills and Lena Coulee (see Figure 2).



At least 80-90% of the springs that provide water for woody riparian are located on private lands. Much of the best riparian habitat is located on private land and state lands within the allotments.

Another product of these relatively moist coulees, combined with the good condition rangeland, is high-quality sharp-tailed grouse habitat. Sharptail need both brushy coulees and grasslands. These two habitat types occur in a favorable amount and arrangement in the subject area. Sharptails are heavily dependent on buffaloberry, especially for winter habitat, and excellent stands of buffaloberry are produced in and adjacent to the moist coulees. Other woody species such as chokecherry also provide fruit and buds for forage. When the water and cover factors of the coulee "heads" are considered, it is apparent that all the birds' habitat needs are well provided for in a small area. Surveys of these areas have revealed some of the highest sharptail lek (an assembly area for display and courtship behavior) densities known. A lek defines a grouse population's crucial yearlong habitat, and about 20 leks have been located on both the Carpenter Creek and Craig Coulee Allotments. Many lek centers are less than 1 mile apart, indicating a high density of birds and very productive habitat. Portions of lek influence zones, whose centers are located outside these two allotments, overlap into the area of consideration. Undoubtedly many more leks remain to be discovered.

Important mule deer habitat including some winter range, is located in both allotments. Although hunter interest in mule deer is not as high as elk and sharp-tailed grouse, the allotments still receive substantial hunting use for mule deer (813 hunter days annually).

There are four endangered species that either do or could occur on the allotments: the bald eagle, the peregrine falcon, piping plover and the black-footed ferret. There is no known critical habitat within the allotments for any of these animals.

The bald eagle is a spring and winter migrant through the area. One or two individuals are seen yearly, and numerous sightings are on record. During years of high waterfowl populations or heavy carp die-offs, eagles in the area will forage around several of the larger watershed structures. However, a high concentration of eagles has never been observed in this area under those circumstances.

Peregrine falcons have never been reported in the allotments. The birds could be attracted to waterfowl concentrations on the various watershed facilities, i.e. dams, waterspreaders, etc.. Peregrines have apparently not taken advantage of these waterfowl concentrations to date.

The piping plover have never been reported on the allotments. The birds prefer sandy areas next to water but could use saline seeps below reservoirs.

There have been no documented black-footed ferret sightings in the allotments although there are five known prairie dog towns located on the Carpenter Creek Allotment. The prairie dog towns are so small (less than 20 acres) that they would provide only very marginal habitat for black-footed ferrets. Suitable habitat does exist in Phillips County.

Topography, threatened and endangered animals, prehistoric and historic features were not addressed in the impacts section because the proposed action and the proposed implementation schemes would not impact these environmental components.

#### IV. ENVIRONMENTAL CONSEQUENCES

All alternatives are evaluated using the following assumptions:

1. Short term is defined as the first 5 years following the implementation of the alternative.
2. Long term is defined as 5 years and beyond, following the implementation of the alternative.

##### A. Alternative 1 - Existing Management - No Action

###### 1. Soils

In the short and long term, the localized heavy use in the coulee bottoms will continue to cause accelerated erosion in the Carpenter Creek Allotment. The rest-rotation system in Craig Coulee would improve ground cover by incorporating litter into the soil and distribute livestock out of the coulee bottoms in the long term. This would slightly decrease the amount of accelerated erosion. Erosion caused by trailing would be decreased because of the additional water developments.

The new reservoirs would cause some local saline seep.

###### 2. Vegetation

Although no grazing season deferment (4/1-8/1) would be provided in the Square Creek, Barth Ridge and Harper's North Pastures, no significant impacts are expected on vegetation in the short term. In the long term, the range condition would continue to decline slowly on the Upper Square Creek, Sutherland and South Fork of Willow Creek Pastures with the continued spring use. The coulee bottoms on both allotments would be overgrazed, and the bench tops



would likely remain underutilized. The utilization pattern would remain the same with livestock heavily utilizing the drainage bottoms and around the reservoirs while leaving other areas untouched. The range condition in the Craig Coulee Allotment would improve with the rest-rotation system.

The woody riparian and wetlands areas in the Square Creek Pasture would remain static or in a slightly declining condition with most of the decline occurring on private land because of the hot season use (7/1-9/10). The woody riparian condition in Craig Coulee would remain unchanged even with the 3-pasture rest-rotation system, since these areas would receive hot season use 2 out of 3 years.

The wetlands in Carpenter Creek Allotment would remain in the same condition which is below its potential because of repeated early spring use.

### 3. Livestock Management

The permittee would most likely fence off some of his private land in the Square Creek Pasture so he could handle his AI operation and have some flexibility on where to put his livestock. Weaning weights on calves and the conception rate would improve slightly because of the additional water developments. The ability of the operator to intensively manage his livestock would be limited because of the additional capital investments needed.

### 4. Visual Resources and Recreation

A slight intrusion to visual resources would occur if the private land were fenced. Recreational access to the fenced areas would be limited somewhat.

In the long term, hunter days would decline slightly under this alternative because of the decline in elk numbers and sharp-tailed grouse (see Wildlife impacts).

### 5. Economic and Social Impacts

The current livestock operation would continue as a cow-calf and yearling operation. In the short and long term this alternative would not allow the operator to improve the percent of calf crop but weaning weights would improve slightly over the long term. In the long term this would result in a small increase in ranch income for the operator.

In the short term, recreation benefits would not change. However, in the long term, it is estimated that recreation opportunities and benefits would decline slightly due to displaced elk and a reduction in sharptail numbers.

The anticipated benefits include increased calf and yearling weights, which would result in increased livestock production. Anticipated costs are for range improvements and management time for the operator and BLM and a decrease in wildlife/recreation benefits. The present values of benefits and costs are \$150,000 and \$243,000 respectively for a benefit/cost ratio of .6/1 (see Appendix 6). Increased livestock production accounts for all the benefits while the change in recreation is insignificant. Benefits from increased livestock marketing flexibility or additional AUMs that would be present after the grazing system is implemented were not accounted for. An MFP decision allocating all additional forage to watershed protection prohibits allocating any AUMs to livestock or wildlife.

#### 6. Wildlife Populations and Habitat

In the long term, habitat and wildlife populations would decline slightly in the Square Creek Pasture because of the deterioration of riparian areas.

In addition to habitat quality deterioration over the long term, elk would be displaced from the allotment in the short term, due to social intolerance with cattle. Displaced elk would be denied preferred calving areas with a resultant decline in production. Elk forced from Carpenter Creek Allotment would likely cause increased agricultural crop depredations. Such depredation complaints would cause Fish, Wildlife and Parks to reduce the herd. Sharptail habitat and number would decline slightly because of the riparian degradation in the Square Creek and Upper Southfork Willow Creek Pasture. Other wildlife habitat and numbers would remain in high condition.

There would be no impacts on endangered species.

#### B. Alternative 2 - Rest-Rotation

##### 1. Soils

In the long and short term, accelerated erosion would decrease slightly on both allotments. Litter incorporation into the soil caused by livestock use in areas of underutilized vegetation would increase the amount of ground cover, decreasing erosion. The proposed water developments would decrease the amount



of trailing into the coulee bottoms which in turn, would also decrease accelerated erosion. The spring deferment and associated improvement of the vegetation in the coulee bottoms would decrease erosion in these areas.

New reservoirs could cause local saline seeps.

## 2. Vegetation

Net range condition on both allotments would remain unchanged under this alternative. In the long term, the Barth Ridge and Harper's North Pastures would decline in range condition because of the early spring use every year. The range condition would remain static on the winter use pasture because no change in livestock grazing period or intensity would occur. A slight improvement in condition would occur in the remainder of the Carpenter Creek and Craig Coulee Allotments because of 1 year's rest in 3 and late deferment to allow the plants to set seed before allowing livestock grazing.

The woody riparian vegetation would remain in good condition under this alternative. The increased concentration of livestock in the woody riparian zones in the Carpenter Creek Allotment during the hot season would cause some additional mechanical damage to the vegetation, but the late use and rest treatment would provide time periods free of livestock, and the plants would recover when used only 1 year in 3 during this time period. In the Craig Coulee Allotment the woody riparian in the Frenchman Hills Pasture could decline in condition somewhat in the long term, since this area would receive hot season use 2 out of 3 years.

In the long term, the wetland communities would improve in vegetative condition. More woody species and desirable grasses would be present because of the rest treatment and the rotation of livestock so the same areas are not grazed in the early spring every year.

The utilization pattern would be more uniform over the grazed pastures in the Carpenter Creek and Craig Coulee Allotments than the current situation and Alternative 3 because of the heavier concentration of livestock in an area. The overall percent utilization could increase to approximately 65% on the grazed pastures with rest-rotation. Plant vigor, productivity, and forage quality would improve due to controlled grazing of currently ungrazed areas. Standing litter would be incorporated into the ground which would increase watershed cover. Utilization in presently ungrazed areas would still be light due to the topography.

### 3. Livestock Management

The management of livestock for this operator could be more intensive than the existing situation but would not work as well as Alternative 3. The breeding and calving pastures would be smaller than the existing pastures so the percent of calf crop and weaning weights would improve slightly. A set of branding corrals would be needed in the Harper's North Pasture to facilitate livestock handling. The operator would not have a place for his replacement stock with this system which could lower the net worth of the ranch as a unit.

The livestock moves could be better controlled and based on the phenological stages of willows and hot season use on the woody riparian.

The yearling use on the Craig Coulee Allotment would provide more even distribution than the present cow use, and weight gains on yearlings would improve because of the proposed range improvements and improved distribution.

### 4. Visual Resources and Recreation

The range improvements associated with this alternative would also degrade visual resources somewhat. In the long term, recreation access (vehicular) would be curtailed because of the additional fences, and hunter days would decline slightly because of decreased sharp-tailed grouse numbers.

### 5. Economic and Social Impacts

The current livestock operation would continue as a cow-calf and yearling operation. In the short and long term this alternative would allow the operator through intensive management practices to increase the calf crop from 80 to 90% and increase calf weaning weights by 30 pounds. It is anticipated that livestock production and ranch income would increase. This change is insignificant at the regional or local level when measured in terms of employment, earnings or production. In the long term it is estimated that recreation benefits from hunting would decline slightly due to a reduction in sharptail numbers.

Anticipated economic benefits include increased calf and yearling weights which would result in increased livestock production. Anticipated costs include range improvements and management time for the operator and BLM and a decrease in wildlife/recreation benefits.



The present values of benefits and costs are \$228,000 and \$249,000 respectively for a benefit/cost ratio of .9/1 (see Appendix 6). Increased livestock production accounts for the major portion of the benefits (96%) while the changes in watershed and recreation are insignificant. Benefits from increased livestock marketing flexibility or additional AUMs that would be present after implementing the grazing system were not accounted for. An MFP decision allocating all additional forage to watershed protection prohibits allocating any AUMs to livestock or wildlife.

This was the working group's second choice of alternatives. The wildlife representatives felt we would be sacrificing sharp-tailed grouse for elk, and the operator did not like the alternative because of the difficult livestock moves and the lack of a place to keep replacement stock.

#### 6. Wildlife Populations and Habitat

Elk-cattle social intolerance in the Square Creek area would be minimal, as approximately 66% of the critical habitat would be ungrazed by livestock during the late spring and summer periods. The rest-rotation system would reduce residual cover for sharp-tailed grouse habitat, thereby reducing sharptail numbers in the Carpenter Creek Allotment. Research in Phillips County on a rest-rotation system has shown that sharptail will not shift their traditional use patterns to take advantage of more favorable habitat conditions in adjacent pastures. Mule deer habitat on currently ungrazed areas would be maintained due to the mitigative measures specified in the Missouri Breaks EIS for location of water development.

Habitat for other wildlife would remain in high condition. Some slight improvement in antelope habitat may be possible in the Craig Coulee Allotment because of the improved range condition. In this allotment improved range condition would result from forbs and grasses occupying bare ground currently existing between shrubs, i.e. greasewood and sagebrush. A significant decrease of sagebrush canopy is not expected with improved range condition. Overall wildlife habitat would be in good condition on both allotments even though livestock would graze some areas that are currently ungrazed.

There would be no impacts on endangered species.

### C. Alternative 3 - Deferred Rotation

#### 1. Soils

In the long term, accelerated erosion would decrease slightly because of improved ground cover caused by litter incorporation into the soil surface. Livestock use in these areas of underutilized vegetation would have this effect. Erosion caused by trailing would decrease because of the additional livestock waters and the deferment of early spring livestock use.

The new reservoirs would cause some local saline seeps.

#### 2. Vegetation

As a result of the fences, water developments, a deferred-rotation grazing and improved distribution the range condition would improve slightly over the long term in both allotments. Range conditions would improve because of the early spring rotation and deferment in Upper Willow and Upper Square Creek Pastures and the deferment of the Frenchman Hills and Sheepshed Pastures until after 6/25. In the long term, a decline in range condition in the Sutherland Pasture could be expected because of the early spring use every year. However, the custodial permit in this pasture would specify that the pasture could be used at the operator's discretion as long as range condition is maintained. The winter and calving pastures would most likely remain in the same range condition because no change in season of use is proposed for these areas.

The woody riparian areas would at least be maintained in the same condition in the long term over both allotments.

A slight decline in woody riparian condition in the Frenchman Hills could occur because of the pasture fencing and increased livestock use during the hot season (7/1-9/10). A small increase in woody riparian condition could occur in the Sheepshed Pasture because of the deferment of this pasture from grazing during a portion of the year. The remaining woody riparian areas would likely remain in the same condition.

The wetland/herbaceous communities associated with the riparian areas would improve in the Carpenter Creek Allotment. Wetland communities with potential to support trees and/or shrubs would have an opportunity to establish with the deferred-rotation system and early spring deferment.



The utilization pattern would improve due to the range improvements and deferred grazing system, although not as much as with a rest-rotation system. The overall utilization percentage would remain the same; utilization in ungrazed areas would remain light. The yearling cattle in Craig Coulee would disperse over the allotment better than the current cow operation, because yearlings tend to travel more and do not concentrate around reservoirs to the extent that cows do. Plant vigor, productivity and forage quality would improve due to controlled grazing of currently ungrazed areas. Standing litter would be incorporated in the ground which would provide more watershed cover.

### 3. Livestock Management

The management of livestock for Page-Whitham et.al. would be significantly improved over the existing situation. The operator would have smaller breeding and calving pastures which, in the long term, would improve his percent of calf crop and weaning weights. The operator would have more marketing flexibility with a yearling operation and a calf operation. One pasture (Sutherland) was designated for use during 3/1-2/8 which would give the operator an opportunity to keep his 2-year olds and yearlings separate during the time he is artificially inseminating livestock. The operator would be able to adjust to varying climatic conditions by decreasing or increasing the number of yearlings. This could help improve the range condition and would leave residual forage for wildlife and watershed during drought years.

### 4. Visual Resources and Recreation

Visual resources would be degraded somewhat because of the intrusion of additional fences and man made waters. Recreation access for hunters and off-road vehicle users would be slightly reduced by the fences. The conflict between recreationists and the landowner would be kept at a minimum. Hunter days would not be affected by this proposal.

### 5. Economic and Social Impacts

The current livestock operation would continue as a cow-calf and yearling operation. In the short and long term this alternative would allow the operator through intensive management practices, to increase the percent of live calf crop from 80 to 90% and increase calf weaning weights by 50 pounds. It is anticipated that livestock production and ranch income would increase.

This change is insignificant at the regional or local level when measured in terms of employment, earnings or production. Recreation benefits would not change under this alternative.

Anticipated benefits include increased calf and yearling weights which would result in increased livestock production. Anticipated costs are for range improvements and management time for the operator and BLM. The present values of benefits and costs are \$285,000 and \$267,000 respectively for a benefit/cost ratio of 1.1/1 (see Appendix 6). Increased livestock production accounts for the major portion of the benefits (97%) while the change in watershed is insignificant. Benefits from increased marketing flexibility or additional AUMs that would be present after the system is implemented were not accounted for. An MFP decision allocating all additional forage to watershed protection prohibits allocating any AUMs to livestock or wildlife.

#### 6. Wildlife Populations and Habitat

Elk-cattle social intolerance would be reduced compared to Alternative 1, the No Action alternative. Except for the Sutherland Pasture (which is 71% private land) there would be no livestock on the critical habitat in the Square Creek area in the late spring and summer periods.

Wildlife habitat would remain in high condition, and no significant improvement or decline in wildlife numbers would be expected under this alternative. Both allotments have high condition habitat at this time, and no significant shifts in condition are expected over both the short and long term. Water developments and fences would result in cattle grazing areas that have been almost exclusively available to wildlife. Mitigative measures for location of water developments which are specified in the Missouri Breaks Grazing EIS would limit possible adverse impacts to mule deer habitat in these areas. The grazing system would maintain or improve the habitats in these areas. Utilization levels in these areas would be light with the deferred-rotation system so sharp-tailed grouse populations would not be affected. Improved range condition in the Craig Coulee Allotment would improve antelope habitat slightly due to increased production of desirable forbs and grasses.

There would be no impacts on endangered species.

Alternative Comparison Summary  
Trend over Long Term (5 years or more)

	<u>Existing</u>	<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Watershed Condition	good (60-70%)	decline (50-65%)	improve (65-75%)	improve (65-75%)
Range Condition (% of potential)	(65-75%)	decline (60-65%)	static (65-75%)	increase (65-75%)
Utilization	uneven (0-80%)	uneven (0-80%)	more uniform (30-65%)	more uniform (20-60%)
Riparian Condition (% of potential)	good (60-70%)	decline (50-65%)	static (60-75%)	static 60-75%)
Livestock Management (overall)	fair	improve slightly	improve moderately	improve greatly
Calf Weights	400 lbs.	improve slightly (410-430)	improve slightly (410-430)	improve moderately (430-450)
Livestock Conception Rate	80-90%	static (80-90%)	improve (85-95%)	improve (85-95%)
Hunter Days	2,345	slight decline	decline slightly	static
Ranch Management Opportunities		improve slightly	improve moderately	improve greatly
Cost/Benefit Ratio		.6	.9	1.1/1
Wildlife Habitat Condition (overall)	good	static	static	static
Elk (Valley Co. winter population)*	200-300	decline 175-275	static 200-300	static 200-300
Sharptail*	2,000 to 6,700	slight decline 2,000-6,400	slight decline 2,000-6,400	static 2,000-6,700
Crop Depredation by elk	\$	increase	static	static
Displacement of elk by livestock grazing	minimal	increase	static	static

\* The wildlife population figures portrayed above are rough approximations included only to give the informed reader an indication of the level of impact. These figures are not statistically sound representations of actual wildlife populations.



# Appendix 1

## UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

### MANAGEMENT FRAMEWORK PLAN RECOMMENDATION-ANALYSIS-DECISION

Name (MFP)	Valley WC
Activity	Range Management
Overlay Reference	
Step 1	Step 3

Multiple Use Recommendation Relative to Proposed Recommendations RM 9-1, RM-10-1 and RM-11-1

#### I. Allocate livestock use at the present level of stocking for the following allotments:

Allotment		
No.	Name	Fed. AUMs
4572	Corral Coulee	1,314
4577	Mud Creek	360
4578	McQuin Ind	396
4579	Upper Larb	854
4580	Craig Coulee	8,598
4586	Upper Mud Creek	232
4587	Duck Creek	171
4588	Timber Creek	573
4589	South Fork Willow	922
4593	Skunk	265
4594	Frenchman Coulee	572
4595	Carpenter Creek	5,582
4596	Matador	773
4600	Cabin Coulee	875
Total		21,487

#### Reasons

An on the ground analysis does not support that present stocking rates are improper. Resource problems are judged to be related to poor livestock distribution patterns and grazing use during the same season each year.

#### Alternatives Considered

- 1) Reduction of stock levels

MANAGEMENT FRAMEWORK PLAN  
RECOMMENDATION-ANALYSIS-DECISION

Activity	Range Management
Overlay Reference	
Step 1	Step 3

The preceding Multiple-Use Recommendation (I) will be carried out under three different levels of management involving livestock and allotments. The three levels are listed following as IA, IB and IC and each includes a statement of reasons and alternatives considered.

IA - Implement Allotment Plans for the purpose of improving range, watershed and wildlife habitat conditions on following allotments.

Allot #	Name	Fed. AUMs
4572	Corral Coulee	1314
4579	Upper Lerb	874
4580	Craig Coulee	8598
4586	Upper Mud	232
4588	Timber Creek	573
4589	South Fork Willow	922
4594	Frenchmen Creek	577
4596	Matador	773

- 1) Due to resource problems identified, as a minimum requirement, yearlong rest is required in the grazing formula for all allotments except #4586, Upper Mud.
- 2) As a minimum, growing season deferment (4/1-8/1) should be required in the grazing formula for # 4586, Upper Mud.
- 3) Fencing patterns for pasture units proposed by these NPs will depend upon specific allotment situations.

Reasons

These allotments have identified resource problems related to wildlife, recreational, watershed and range management values. The identified problems relate to distribution of livestock and season of use rather than improper stocking rates.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

Appendix 1 contd.

MANAGEMENT FRAMEWORK PLAN  
RECOMMENDATION--ANALYSIS--DECISION

Name	W/P
Valley	WC
Activity	Range Management
Overlay Reference	
Step 1	Step 3

Alternatives Considered for IA

- 1) Instead of rest prescription - winter use (11/1 - 4/15) for each of the identified allotments each year. This alternative would result in considerable change to many existing operations. The change almost always would be severe to the individual operator from an economic standpoint.
- 2) Continue present pattern and season of use - continuation of present use would not provide for the improvement of localized sore areas in allotments, would not provide for improvement of small, but nevertheless important wildlife habitat acreages consisting of stream and coulee bottoms.
- 3) Instead of rest prescription, variations in grazing systems which provide growing season deferment - as a means of improving riparian and creek bottoms.
- 4) Exclusion of livestock from riparian and creek bottoms - extensive fence maintenance requirement.



UNITED STATES Appendix 1 contd.  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

MANAGEMENT FRAMEWORK PLAN  
RECOMMENDATION-ANALYSIS-DECISION

Name (B/L/P)	
Valley - WC	
Activity	
Range Management	
Overlay Reference	
Step 1	Step 3

I- B) Interim Management - Continue present use pending GMR management determinations

Allot #	Name	ACRES
4587	Duck Creek	171
4593	Skunk	265

Reasons

These allotments are not fenced from the GMR Game Range and consist of a small minority of the acreage in relation to the total size of the pasture included in these allotments. The present grazing use, as it is occurring on the ground is satisfactory, primarily due to the fact that these areas are a considerable distance from livestock water sources. Changes in grazing administration within the game range will require a new assessment of management alternatives for the BLM administered ground. Until that should occur, future planning of grazing use on these areas is premature, since it does not appear to be in the public interest to fence the boundary at these locations.

Alternatives Considered for I-B

- 1) Fence boundary, construct water developments and prescribe fall grazing only - high economic cost in relation to grazing value.
- 2) Fence boundary, construct water developments and authorize use for the same season as present - not satisfactory from watershed standpoint.

MANAGEMENT FRAMEWORK PLAN  
COMPLETION: HIGH-ANALYSIS-10-10-10

Name:                     

## Appendix

Original Reference

4, 5, 6 !

3. קטן:

<u>Pilot #</u>	<u>Name</u>	<u>Fed. Aids</u>
4577	Mid Creek	370
4578	McQuin Indiv.	396
4595	Carpenter Creek	5582
4600	Cabin Coulee	875

- 1) The present (1977) use seasons will be adhered to with the following exceptions;
  - a) for allotments #4577 & #4578 no change will be made unless it would result in less use for the period 4/1 - 7/31
  - b) For allotments # 4595 & #4600 no change will be made unless it results in less grazing use for the period 4/16 - 10/30

On the ground determinations do not reveal extensive or unacceptable conflicts of this use with other resource values. Indiscriminate changes in present seasons of use could conflict with other resource values.

1) Write AMPs to sanction present use situation.

Appendix 1 contd.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

MANAGEMENT FRAMEWORK PLAN  
RECOMMENDATION-ANALYSIS-DECISION

Name (MFP)	Valley - WC
Activity	Range Management
Overlay Reference	
Step 1	Step 3

II. Allocate any future increased herbage production for the purpose of watershed protection and improvement.

Reasons

The watershed is of special concern in the Willow Creek planning unit. The area is highly susceptible to erosion due to soil properties, (primarily texture, depth, permeability, water holding capacity) and slope. There are extensive areas with more than 30% bare ground. While much of the soil movement which is presently taking place is judged to be of natural geologic origin, there is potential to increase residual soil cover and plant litter. Livestock management by grazing system and conservative stocking rate may be the most economical and practical method to improve watershed conditions for these fragile soils.

-----

Alternatives Considered

- 1) Allocate 40% of additional herbage production to livestock
- 2) Allocate some amount less than 40% of additional herbage production to livestock.



Appendix 1 contd.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

MANAGEMENT FRAMEWORK PLAN  
RECOMMENDATION-ANALYSIS-DECISION

Name (MFP)

Valley WC

Activity

Wildlife

Overlay Reference

Step 1

Step 3

Multiple-Use Recommendation (See also RM 10-1)

- 1) Continue to provide seasonal habitat to meet spring, summer, and early fall needs for up to 170 elk in the Harper Ridge herd.  
(Combined with Pines herd to total 250 head for the planning unit.)  
(512 AUMs)
- 2) Establish livestock season and number as approved in 1977.
- 3) Changes in livestock use will be made only if change results in less livestock use being made from 4/16 - 10/31.

Alternatives Considered

- 1) AMPs with intensive grazing systems to make major changes in present livestock use - not necessary in view of high range condition.
- 2) Grazing seasons restricted entirely to use periods of 11/1 - 4/15.

(11)

Note: Attach additional sheets, if needed

(Instructions on reverse)

## Appendix 2

Several alternatives were seriously considered by the working group and the staff specialist but discarded because of various reasons. These alternatives are discussed below:

1. Deferred rotation using the Timber Creek Pasture during the summer. The problems with this alternative are as follows:

- a. Hot season use on riparian areas in Timber Creek Pasture every year causing a decline in riparian habitat for elk.
- b. Extensive water development would be needed in Timber Creek to run livestock in the summer.
- c. The area is ideal for winter use by livestock and the operator considers this deferred-rotation a waste of good winter feed.
- d. Elk calving in Timber Creek could be disturbed.
- e. The plan did not meet the needs of the operator.

2. Deferred or season long on Carpenter Creek (Page-Whitham application).

The livestock would winter on Harper's ridge every year and then would be put in the Timber Creek Pasture until the end of July and then moved into the Square Creek Pasture for late summer and fall. A variation of this plan, rotating Square Creek and Timber Creek, could be implemented if waters were developed in the Timber Creek pasture. The operator felt he could intensively manage his livestock as well under this alternative as some others that were proposed. The problems with this plan were as follows:

- a. Hot season use on riparian areas in both the Square Creek and Timber Creek pasture could cause a decline in riparian values with a possible associated loss of elk numbers.
- b. Early season use on Timber Creek would cause a decline in range condition. To help mitigate this problems the deferred system could be implemented but this would entail extensive water development on Timber Creek.
- c. There would likely be some elk disturbance problems from livestock.
- d. The Timber Creek Pasture is best suited for winter use.

3. Restrict livestock from grazing 11/1 to 4/15 on the Carpenter Creek Allotment.

## Appendix 2 contd.

This alternative was used as an elk maximization alternative. The problems associated with this alternative are as follows:

- a. Requires a 25% reduction in livestock over both allotments.
- b. Politically and socially this is not a viable alternative.
- c. This did not meet the need or desires of the operator.
- d. Increases early livestock use on the Craig Coulee Allotment which could cause a decline in range condition.
- e. Would very negatively impact the economic condition of the ranch.

### 4. Split Herd Alternative

The livestock would be split into two herds with approximately half the livestock being grazed in both the Timber Creek and Harper's Ridge pastures from November 1 until until June 30. The cattle would then be combined into one herd in the Square Creek Pasture. The problems associated with this alternative were as follows:

- a. Early spring use on both Harper's Ridge Pasture and Timber Creek pasture could cause a decline in range condition.
- b. Hot season use on riparian areas in the Square Creek Pasture could cause a decline in riparian values and an associated decline in elk numbers.
- c. The lack of stockwater in the Harper's Ridge Pasture could cause inconsistent move dates.
- d. This alternative is in violation of the land use plan.

5. The system that the owners of the ranch (Etchart's ran was year round operation with cows and calves on both the Carpenter Creek and Craig Coulee Allotments. Approximately 2,000 head of brood cows were run on both allotments.

The allotments are licensed as a whole unit but generally livestock moves have occurred the following way by pasture:

<u>Pasture</u>	<u>Dates</u>
Harper's Ridge	12/1 to 5/1
Timber Creek	12/1 to 5/1
Square Creek	4/1 to 7/15, 11/1 to 12/1
Craig Coulee (south)	6/1 to 8/1, 11/1 to 11/30
Craig Coulee (north)	8/1 to 10/30



## Appendix 2 contd.

The operation consists of a trailing operating from south to north in the spring and then back south in the late summer and fall.

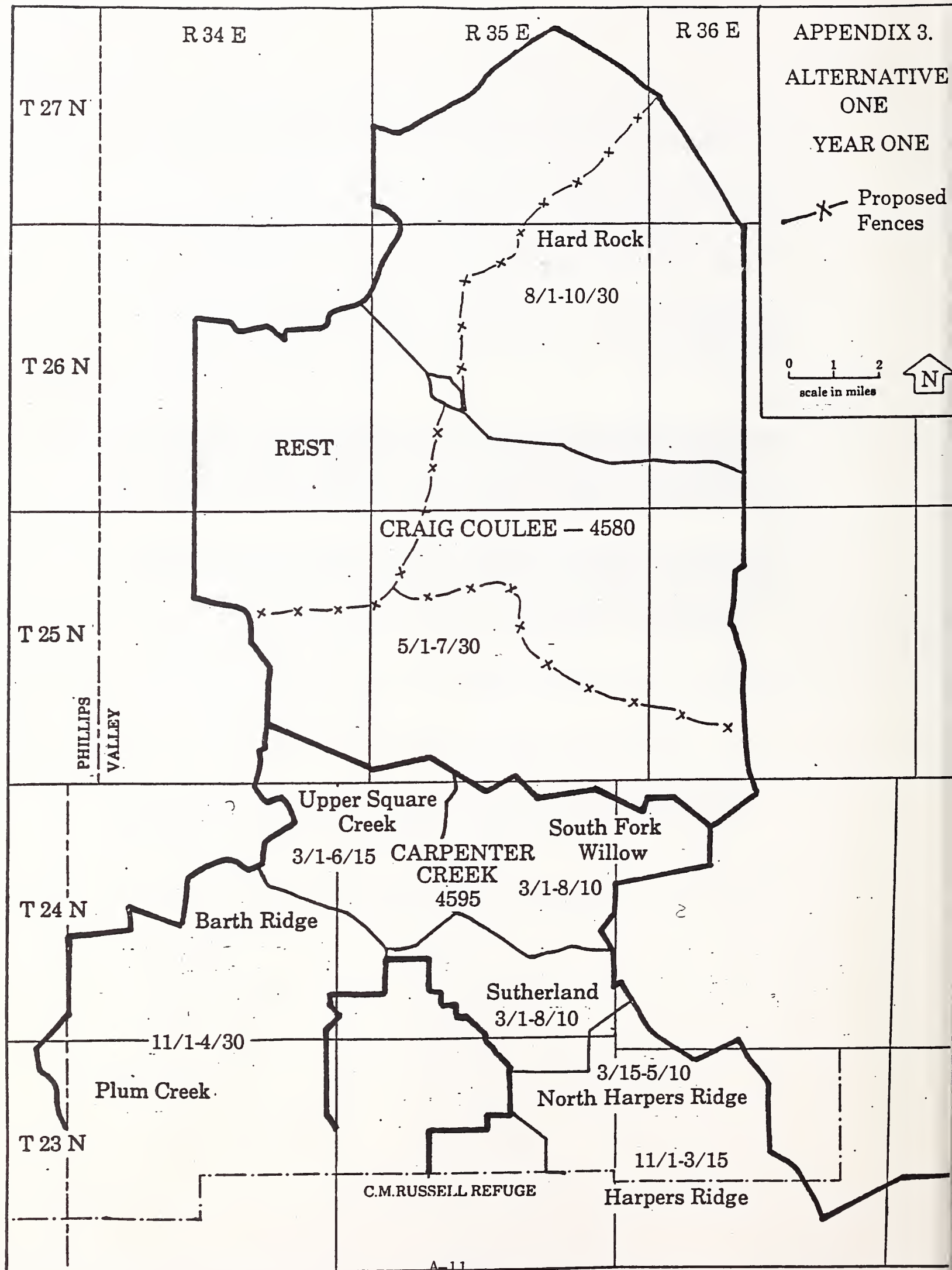
This system was discarded because the new operator opposed it and wanted to run yearlings in the Craig Coulee Allotment. A deferred-rotation system on Craig had been proposed to the Etcharts with a cow-calf type of stock system but it would not work if the new operator changed to a yearling operation as he proposed.

The new operator claimed that the cow operation the Etcharts ran was uneconomical because of the lack of intensive management that he wanted and he could not run yearlings which is the key to his operation.

### 6. Others

Rest-rotation and deferred rotational systems were considered for the Carpenter Creek Allotment but the anti-water development policy of the Charles M. Russell Wildlife Refuge (CMR) precluded these systems since the Harper's Ridge Pasture is mostly controlled by the CMR.

The topography makes it difficult to build waters and the economic benefits to the operator would be questionable when converting good winter country into summer country with water development.



APPENDIX 3.  
ALTERNATIVE  
ONE  
YEAR ONE

—x— Proposed  
Fences

0 1 2  
scale in miles



R 34 E

R 35 E

R 36 E

APPENDIX 3.

ALTERNATIVE  
ONE  
YEAR TWO

—X— Proposed  
Fences

0 1 2  
scale in miles



T 27 N

T 26 N

T 25 N

PHILLIPS  
VALLEY

5/1-7/30

Hard Rock

REST

CRAIG COULEE — 4580

8/1-10/30

Upper Square  
Creek

3/1-6/15 CARPENTER  
CREEK

South Fork  
Willow

4595 3/1-8/10

T 24 N

Barth Ridge

Sutherland  
3/1-8/10

11/1-4/30

Plum Creek

T 23 N

3/15-5/10

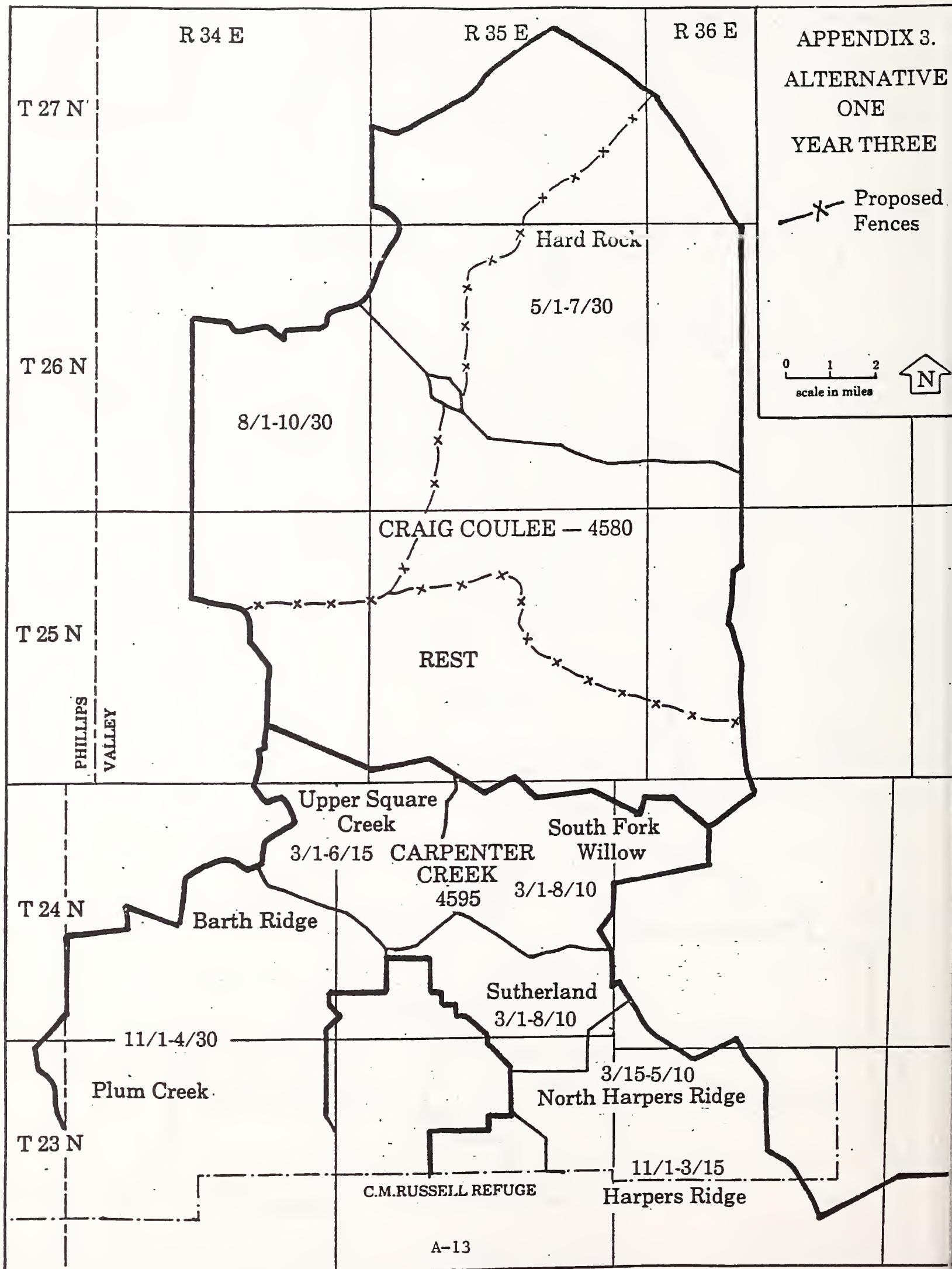
North Harpers Ridge

11/1-3/15

C.M. RUSSELL REFUGE

Harpers Ridge





R 34 E

R 35 E

R 36 E

APPENDIX 3.  
ALTERNATIVE  
TWO  
YEAR ONE

T 27 N

T 26 N

T 25 N

T 24 N

T 23 N

—x— Proposed  
Fences

0 1 2  
scale in miles



PHILLIPS  
VALLEY

Frenchman Hills

REST

Hard Rock

7/15-9/30

CRAIG COULEE — 4580

Sheepshed

5/1-7/15

Upper Square  
Creek

6/15-9/1

CARPENTER

CREEK

4595

South Fork

Willow

9/1-10/30

Barth Ridge

3/15-6/15

Sutherland

REST

Plum Creek

11/1-3/15

North Harpers Ridge

3/15-6/15

C.M. RUSSELL REFUGE

Harpers Ridge

11/1-3/15

R 34 E

R 35 E

R 36 E

APPENDIX 3.

ALTERNATIVE  
TWO  
YEAR TWO

—x— Proposed  
Fences

0 1 2  
scale in miles



T 27 N

T 26 N

T 25 N

PHILLIPS  
VALLEY

T 24 N

T 23 N

Hard Rock

REST

CRAIG COULEE — 4580

5/1-7/15

7/15-9/30

Upper Square  
Creek

9/1-10/30 CARPENTER  
CREEK

4595

South Fork  
Willow

REST

Barth Ridge  
3/15-6/15

Sutherland  
6/15-9/1

Plum Creek  
11/1-3/15

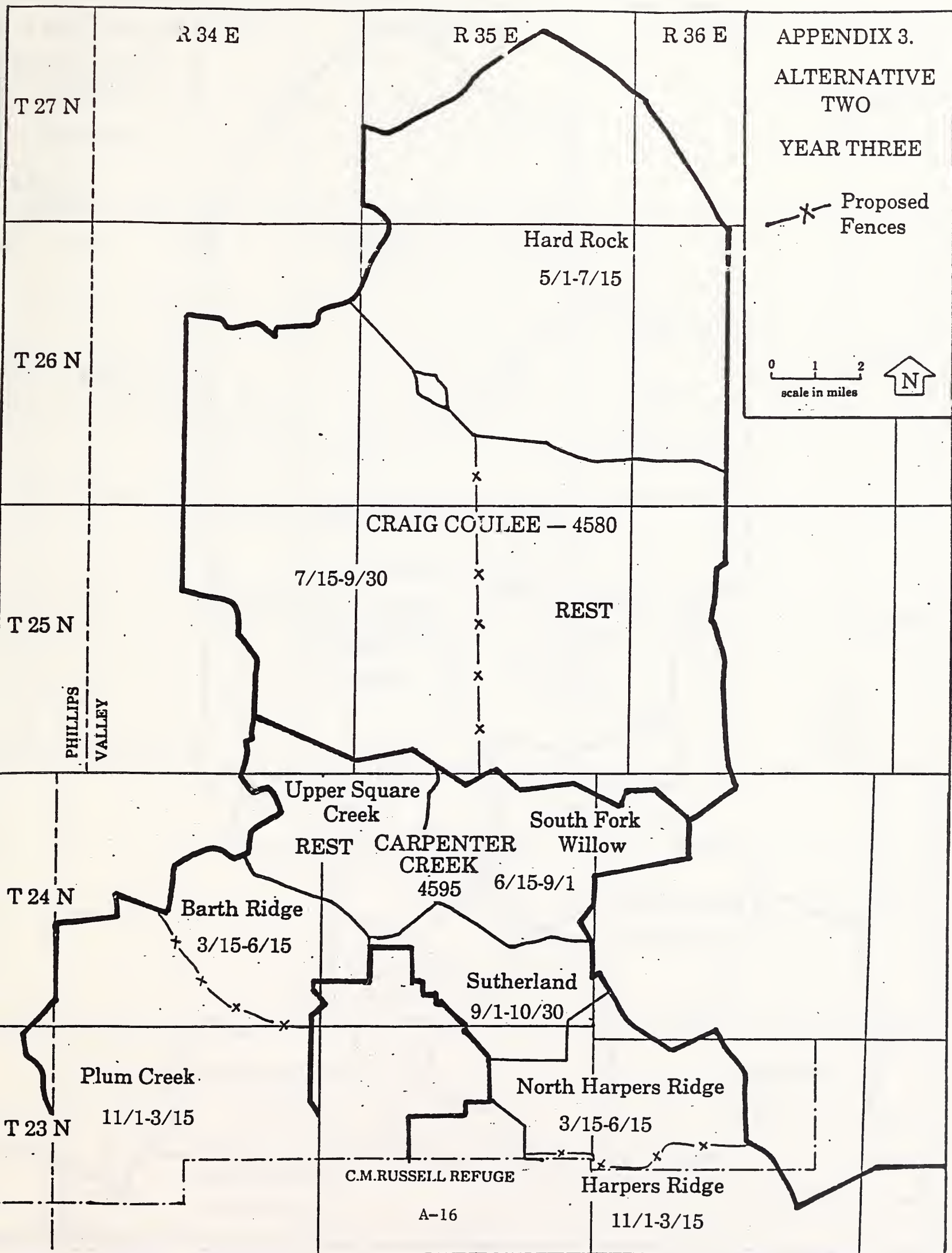
North Harpers Ridge  
3/15-6/15

C.M. RUSSELL REFUGE

Harpers Ridge  
11/1-3/15

A-15





R 34 E

R 35 E

R 36 E

APPENDIX 3.  
ALTERNATIVE  
THREE  
YEAR ONE

T 27 N

T 26 N

T 25 N

T 24 N

T 23 N

—x— Proposed  
Fences

0 1 2  
scale in miles



Ult  
7/15-9/30

Hard Rock  
5/1-7/15

CRAIG COULEE — 4580

Frenchman Hills  
6/25-8/5

Sheepshed  
8/5-9/25

Upper Square  
Creek

5/15-6/25 CARPENTER

South Fork  
Willow

CREEK

4595

9/25-10/30

Barth Ridge  
3/15-5/15

Sutherland  
3/1-2/28

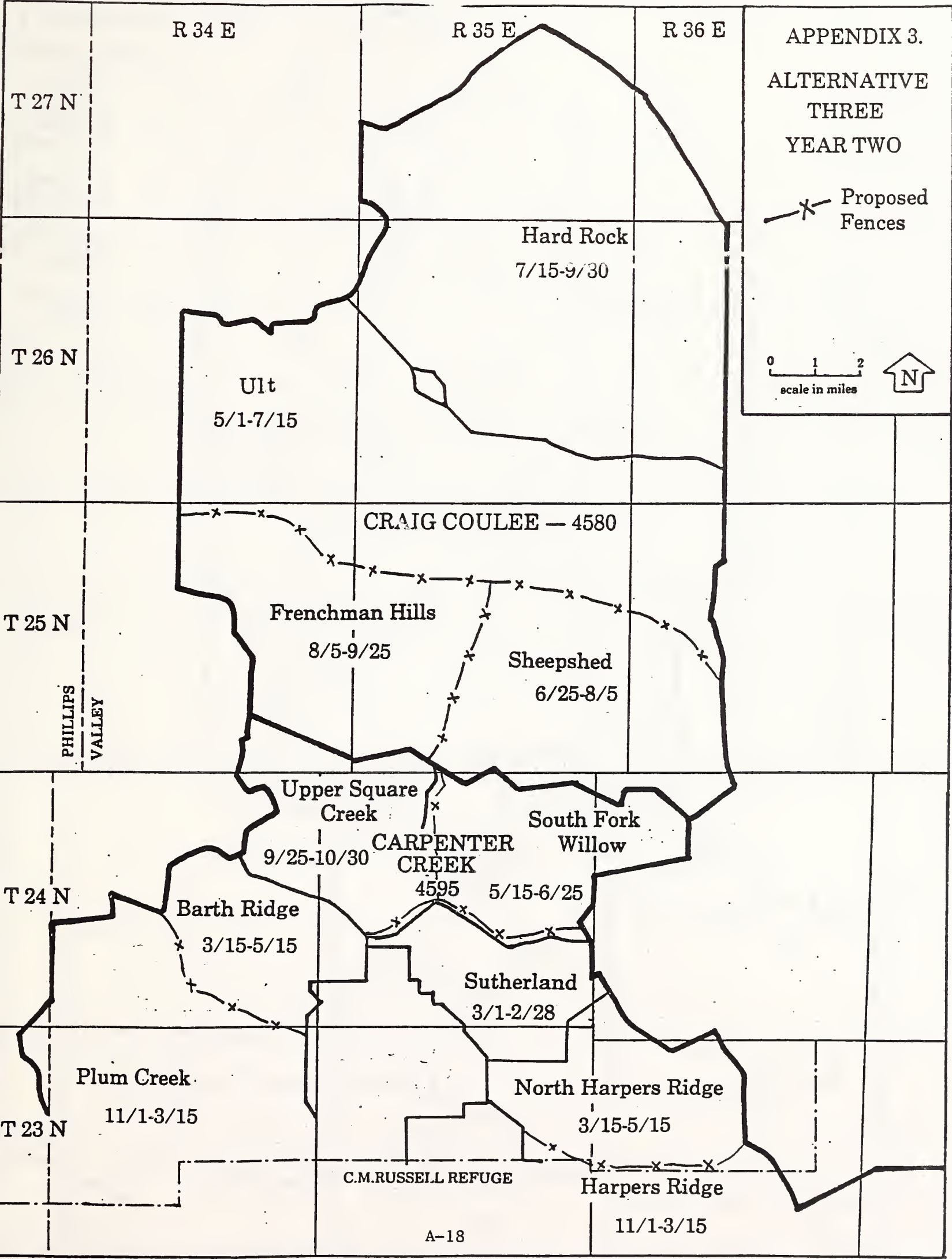
Plum Creek  
11/1-3/15

North Harpers Ridge  
3/15-5/15

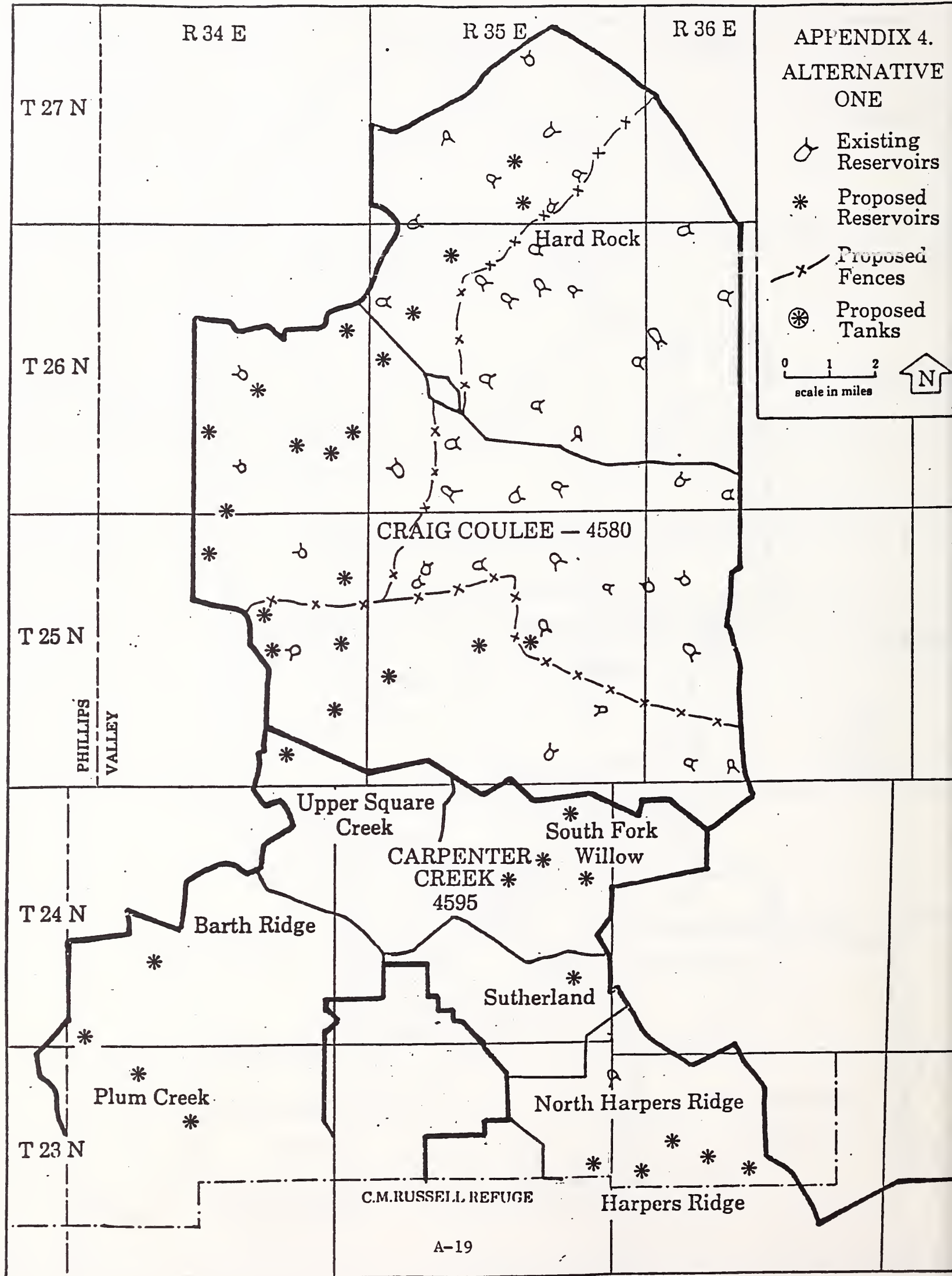
C.M. RUSSELL REFUGE

Harpers Ridge

11/1-3/15







R 34 E

R 35 E

R 36 E

APPENDIX 4.

ALTERNATIVE TWO

Existing Reservoirs

Proposed Reservoirs

Proposed Fences

Proposed Tanks

0 1 2  
scale in miles



T 27 N

T 26 N

T 25 N

PHILLIPS  
VALLEY

CRAIG COULEE — 4580

Upper Square  
Creek

South Fork  
Willow

CARPENTER  
CREEK  
4595

Barth Ridge

Sutherland

Plum Creek

North Harpers Ridge

C.M. RUSSELL REFUGE

Harpers Ridge

R 34 E

R 35 E

R 36 E

APPENDIX 1.

ALTERNATIVE  
THREE Existing  
Reservoirs Proposed  
Reservoirs Proposed  
Fences Proposed  
Tanks0 1 2  
scale in miles

T 27 N

T 26 N

T 25 N

T 24 N

T 23 N

PHILLIPS  
VALLEY

ULT

CRAIG COULEE — 4580

Frenchman Hills

Sheepshed

Upper Square  
Creek

South Fork

CARPENTER  
CREEK

\* Willow

4595

Barth Ridge

Sutherland

Plum Creek

North Harpers Ridge

C.M. RUSSELL REFUGE

Harpers Ridge



R 34 E

R 35 E

R 36 E

APPENDIX 5.

BURNT LODGE  
WILDERNESS  
STUDY AREA

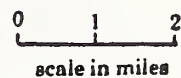
T 27 N

T 26 N

T 25 N

PHILLIPS  
VALLEY

Hard Rock



CRAIG COULEE — 4580

T 24 N

Upper Square  
Creek

CARPENTER  
CREEK  
4595

South Fork  
Willow

Barth Ridge

Sutherland

T 23 N

Plum Creek

North Harpers Ridge

CAL RUSSELL REFUGE

Harpers Ridge

Burnt Lodge WSA A-22

## Appendix 6 : Investment Analysis

An investment analysis was completed to evaluate the benefits and costs of implementing the various alternatives. The benefit/cost analysis provides a relative ranking of the alternatives and not the absolute benefits and costs by alternative. Many qualitative factors cannot be included such as intrinsic values of wildlife and aesthetics. The analysis is not the only criterion being used for judging the merits of an alternative but assists in making a choice by displaying some of the known benefits and costs. The analysis is for a 50 year period and does not include all benefits or costs but only those that could be quantified. The investment criteria used to compare alternatives was the Benefit/Cost ratio (B/C). The investment analysis is provided to compare the relative benefits and costs of the alternatives and probably does not represent the actual values that will occur over time.

The rangeland investment analysis (SageRam) program was used to calculate the present values of benefits and costs and the B/C ratios for the alternatives. This model addresses range improvement and management costs along with the resource benefits to the BLM and operator. The value of nonmarket goods (hunting, etc.,) are based on the National Forest Service benefit values for the 1985 program by resource activity.

All dollar values are expressed in 1983 dollars and the investment analysis assumes an interest rate of 7.875%. Changes in weaning weights and yearling gains were estimated based on improved forage quality and additional water sources. The prices used for calves and yearlings were \$0.70 and \$0.65 per pound respectively. Watershed benefits were derived from extending the life of the existing reservoirs by reducing siltation and thereby reducing maintenance and reconstruction costs. The following table shows costs and benefits by alternative.

Benefits and Costs by Alternative

	<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Costs (50 yr. period)			
Short Term Construction			
BLM	156,000	153,350	161,750
Operator	45,000	69,150	81,750
Long Term Maintenance and Replacement			
BLM	436,020	266,829	274,725
Operator	191,900	302,916	314,760
TOTAL COSTS	<u>828,920</u>	<u>792,245</u>	<u>832,985</u>
Present Value of Total Costs	242,874	249,387	267,270
Present Value of Benefits			
Recreation	-5,909	-2,075	0
Watershed	0	8,451	8,451
Livestock Production	155,595	221,632	276,147
	<u>149,686</u>	<u>228,008</u>	<u>284,598</u>
Benefit/Cost Ratio	.6/1	.9/1	1.1/1





